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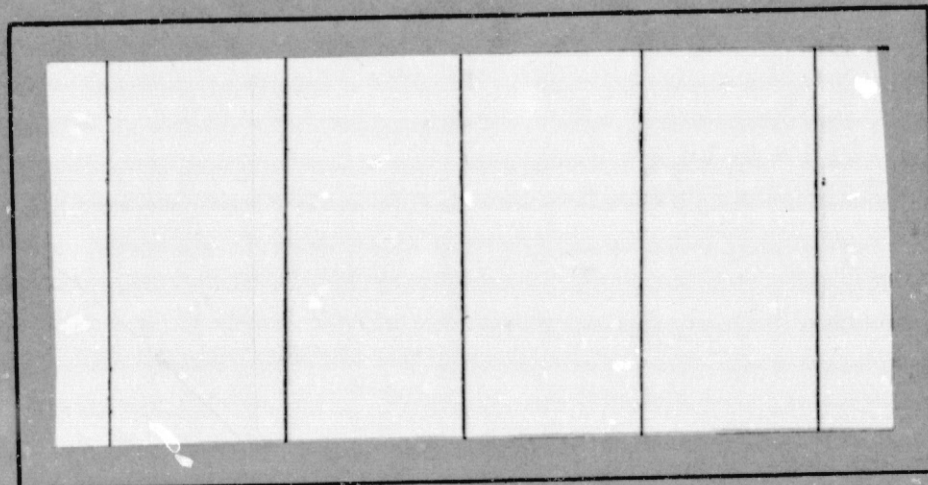
SCIENCE APPLICATIONS INCORPORATED

FINAL REPORT PHASE I
(For Period October 15, 1976–April 14, 1977)
ANALYSIS OF VECTOR WIND CHANGE
WITH RESPECT TO TIME FOR CAPE
KENNEDY, FLORIDA
Contract NAS8-32226

WIND ALOFT PROFILE CHANGE VS. TIME

14 April 1977

Prepared By:

Stanley I. Adelfang

For:

National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama   35812

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16. ABSTRACT Wind vector change with respect to time at Cape Kennedy, Florida,
is examined according to the theory of multivariate normality. The joint
distribution of the four variables represented by the components of the
wind vector at an initial time and after a specified elapsed time is hypo-
thesized to be quadravariate normal; the fourteen statistics of this
distribution, calculated from fifteen years of twice daily Rawinsonde data
are presented by monthly reference periods for each month from 0 to 27 km.
The hypotheses that, the wind component change with respect to time is
univariate normal, the joint distribution of wind component changes is bi-
variate normal and the modulus of vector wind change is Rayleigh is
tested by comparison with observed distributions. Statistics of the con-
ditional bivariate normal distributions of vector wind at a future time
given the vector wind at an initial time are derived.

Wind changes over time periods from one to five hours, calculated from
Jimsphere data are presented. Extension of the theoretical prediction
(based on Rawinsonde data) of wind component change standard deviation to
time periods of one to five hours falls (with a few exceptions) within
the 95 percentile confidence band of the population estimate obtained
from the Jimsphere sample data.

The joint distributions of wind change components, conditional wind
components, and 1 km vector wind shear change components are illustrated
by probability ellipses at the 95 percentile level.

17. KEY WORDS
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FOREWORD

This report describes an investigation performed under Contract NAS8-32226 to the National Aeronautics and Space Administration, George C. Marshall Space Flight Center (NASA/MSFC). Mr. Orvel E. Smith of MSFC Atmospheric Sciences Division, Space Sciences Laboratory, was the NASA Contracting Officer's Representative (COR). The author wishes to express his appreciation to Mr. Smith for the technical discussions and guidance during this effort. The achievements of this investigation could not have been possible without the analytical tools that have been developed in past investigations by the Space Sciences Laboratory.

The author wishes to acknowledge the contributions to this effort by other SAI personnel; Messrs. Willie Robinson and William Adcock* were responsible for the computer programming efforts utilizing the UNIVAC 1108 computer and Mr. John Hickey prepared the programs for the Space Sciences Laboratory Hewlett Packard 21 MX computer.

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*Not presently affiliated with SAI.

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I. INTRODUCTION

It is anticipated that launches associated with the Orbital Flight Test (OFT) missions of the Space Shuttle will be conducted under highly constrained wind profile conditions. This will require the establishment of techniques to minimize the probability of exceeding design maximum wind loading during ascent. Reduction of wind loading can be achieved by wind biasing the ascent trajectory. Ideally, the maximum reduction of wind loading would be achieved if the wind profile "seen" by the ascending vehicle is known prior to launch. This ideal can only be approximated in view of the temporal variability of the atmosphere, limitations in available measurement techniques and the time lag associated with implementing changes in the ascent vehicle wind bias program. However, acceptable wind loading can be achieved over most anticipated winds aloft conditions by designing a pre-launch wind monitoring plan which provides an estimate of in-flight winds within specified error bounds. The establishment of the wind monitoring plan will be based, in part, on knowledge of the statistics of wind change with respect to time.

This study of wind change over Cape Kennedy, Florida, is based on a large sample of winds aloft data (14,610 Rawinsonde profiles) obtained during a fifteen year period. Wind change is expressed in terms of component change, unconditional and conditional joint distribution of component changes, modulus of vector change and the joint distribution of wind shear component change.

This report consists of a brief discussion of technical background (Section II), an analysis of wind change statistics (Section III), a discussion of conclusions and recommendations (Section IV), and listings of the calculated monthly statistics of wind change with respect to time at 1 km altitude increments from 0 to 27 km (Appendix).

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II. · TECHNICAL BACKGROUND

A.   DATA

Wind change statistics for periods from 12 to 72 hours are calculated from the serially complete (0-27 km) Rawinsonde data at 1 km altitude intervals obtained twice daily during the period 1956-70 at Cape Kennedy, Florida. The Rawinsonde data obtained four times daily during the period 1962-66 are used to verify extension (to time intervals of six hours) of theoretical distributions based on the twice daily 1956-70 data. Sequential Jimsphere wind profile data are used for analysis of wind changes for periods less than six hours.

B.   COORDINATE SYSTEM

The basic winds aloft data are recorded in terms of wind direction, θ and magnitude, W. The wind vector is expressed in the standard meteorological coordinate system in which the direction from which the wind is blowing is measured in degrees clockwise from true north. The zonal component, u, of the wind vector is positive for a west (west to east) wind ($\theta=270^{\circ}$) and negative for an east (east to west) wind ($\theta=90^{\circ}$); the meridional component, v, is positive for a south (south to north) wind ($\theta=180^{\circ}$) and negative for a north (north to south) wind ($\theta=0^{\circ}$); u and v are obtained from θ and W according to:

$$u = -W \sin \theta , \qquad\qquad 0 \leq \theta \leq 360^{\circ} \qquad (1)$$

$$v = -W \cos \theta , \qquad\qquad\qquad\qquad\qquad (2)$$

The relation between θ defined above and the angle defined in the standard mathematical polar form is:

$$\theta = 270 - \theta_{Math} \qquad\qquad (3)$$

C. DEFINITIONS

For brevity, whenever feasible, the term temporal variability is used instead of "change with respect

to time". The subscript 0 is used to denote the initial value of a variable and the subscript 1 denotes the variable after an elapsed time, Δt. Thus:

$$\Delta u = u_1 - u_0 \tag{4}$$

$$\Delta v = u_1 - v_0 \tag{5}$$

Where, Δu and Δv are the components of the wind change for a specified Δt. The modulus, R, of the wind change with respect to time is given by:

$$R = \sqrt{(\Delta u)^2 + (\Delta v)^2} \tag{6}$$

The term wind shear is used exclusively in this report to describe the change of vector wind with respect to a specified vertical distance below a specified altitude. The modulus W_S, of the vector wind shear is

$$R = \sqrt{(u')^2 + (v')^2} \tag{7}$$

Where, u' is the zonal wind shear and v' is the meridional wind shear. It is conventional in discussions of wind shear calculations to use the term vector wind shear to represent the modulus of vector wind shear.

Zonal and meridional wind shear change with respect to time are denoted as follows:

$$\Delta u' = u_1' - u_0' \tag{8}$$

$$\Delta v' = v_1' - v_0' \tag{9}$$

The modulus of vector wind shear change with respect to time is

$$R = \sqrt{(\Delta u')^2 + (\Delta v')^2} \tag{10}$$

The means are denoted by an overbar, the standard deviations and the correlation coifficients are denoted by σ_x and $R(X,Y)$, respectively, with X and Y replaced with the notation appropriate to the variable of interest.

D. STATISTICS

The wind vector measurements at an initial time and after an elapsed time are treated in this investigation as a sample from a quadravariate normal distribution defined by the fourteen statistics listed below:

MEANS

$$\overline{u}_0, \ \overline{v}_0, \ \overline{u}_1, \ \overline{v}_1$$

STANDARD DEVIATIONS

$$\sigma_{u_0}, \ \sigma_{v_0}, \ \sigma_{u_1}, \ \sigma_{v_1}$$

CORRELATION COIFFICIENTS

$$R(u_0, v_0) \ , \ R(u_0, u_1)$$

$$R(v_0, v_1) \ , \ R(u_1, v_1)$$

$$R(u_1, v_0) \ , \ R(v_1, u_0)$$

The fourteen statistics of the quadravariate normal distribution of vector wind difference with respect to time consist of the five bivariate normal statistics of vector wind at an initial time ($\overline{u}_0$, $\overline{v}_0$, σ_{u_0}, σ_{v_0} and $R(u_0, v_0)$) and the nine statistics involving component differences which can be calculated from the quadravariate statistics listed above according to the following equations:

MEANS

$$\overline{\Delta u} = \overline{u_1 - u_0} = \overline{u_1} - \overline{u_0} \tag{11}$$

$$\overline{\Delta v} = \overline{v_1 - v_0} = \overline{v_1} - \overline{v_0} \tag{12}$$

STANDARD DEVIATIONS

$$\sigma_{\Delta u} = \sqrt{\sigma_{u_1}^2 + \sigma_{u_0}^2 - 2\sigma_{u_1}\sigma_{u_0} R(u_1, u_0)} \tag{13}$$

$$\sigma_{\Delta v} = \sqrt{\sigma_{v_1}^2 + \sigma_{v_0}^2 - 2\sigma_{v_1}\sigma_{v_0} R(v_1, v_0)} \tag{14}$$

Where $R(x,y)$ is the correlation coefficient of variables x and y.

CORRELATION COEFFICIENTS

$$R(u_0, \Delta u) = \frac{\sigma_{u_1} R(u_0, u_1) - \sigma_{u_0}}{\sigma_{\Delta u}} \tag{15}$$

Where

$\sigma_{\Delta u}$ is obtained from Equation 13

$$R(v_0, \Delta v) = \frac{\sigma_{v_1} R(v_0, v_1) - \sigma_{v_0}}{\sigma_{\Delta v}} \qquad (16)$$

Where $\sigma_{\Delta v}$ is obtained from Equation 14

$$R(\Delta u, v_0) = \frac{\sigma_{u_1} R(v_0, u_1) - \sigma_{u_0} R(u_0, v_0)}{\sigma_{\Delta u}} \qquad (17)$$

$$R(\Delta v, u_0) = \frac{\sigma_{v_1} R(u_0, v_1) - \sigma_{v_0} R(u_0, v_0)}{\sigma_{\Delta v}} \qquad (18)$$

$$R(\Delta u, \Delta v) = \frac{[\sigma_{u_1} \sigma_{v_1} R(u_1, v_1) - \sigma_{u_1} \sigma_{v_0} R(u_1, v_0) + \sigma_{u_0} \sigma_{v_1} R(u_0, v_1) + \sigma_{u_0} \sigma_{v_0} R(u_0 \, v_0)]}{\sigma_{\Delta u} \, \sigma_{\Delta v}} \qquad (19)$$

III. ANALYSIS

A.   INTRODUCTION

The statistics presented in the appendix of this report can be useful in the establishment of a basis for certain aspects of Space Shuttle Launch planning. A pre-launch wind monitoring program may be required to provide data for assessment or modification of the Space Shuttle wind bias program. The development and utilization of the wind monitoring program will require knowledge of the magnitude of vector wind change with respect to time. The analysis presented in this section establishes a theoretical basis for estimation of wind change. This is accomplished by comparision of theoretical probability distributions, which contain wind change sample statistics as parameters (from the appendix of this report), to observed probability distributions of wind change. Wind change with respect to time is analyzed herein in terms of wind component change, unconditional and conditional joint distribution of wind component change, modulus of vector wind change, and the joint distribution of wind shear component change.

B.   WIND COMPONENT CHANGE WITH RESPECT TO TIME

The theoretical probability distribution of wind component change with respect to time is univariate normal with zero mean and standard deviation given by Equations 13 and 14; the assumption of zero means of component differences is verified by the sample statistics given in the appendix. The theoretical normal distribution of component differences can be derived by using either the standard deviations of component differences given in the appendix or an estimate which can be obtained from the standard deviation of the components if it is assumed that:

$$\sigma_{u_o} = \sigma_{u_1} = \sigma_u$$

$$\sigma_{v_o} = \sigma_{v_1} = \sigma_v$$

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Equations 13 and 14 reduce to

$$\sigma_{\Delta u} = \sqrt{2} \; \sigma_u \sqrt{1 - R(u_1, u_0)} \tag{20}$$

$$\sigma_{\Delta v} = \sqrt{2} \; \sigma_v \sqrt{1 - R(v_1, v_0)} \tag{21}$$

The wind component autocorrelation functions, $R(u_1, u_0)$ and $R(v_1, v_0)$ can be represented by a negative expontial function of time increment, τ, i.e.,

$$R(u_1, u_0) = EXP(-b\tau) \tag{22}$$

$$R(v_1, v_0) = EXP(-c\tau) \tag{23}$$

where b and c are computed according to

$$b = -\frac{\sum_i \tau_i \ln R_i (u_1, u_0)}{\sum_i \tau_i^2}$$

$$c = -\frac{\sum_i \tau_i \ln R_i (v_1, v_0)}{\sum_i \tau_i^2}$$

Examples of the decay of the autocorrelation function at 12 km during January, April and July at Cape Kennedy are illustrated in Figure 1; the lines in the figure represent the decay rate predicted by Equations 22 and 23.

Substitution of Equations 22 and 23 into 20 and 21, respectively, yields a simple expression for $\sigma_{\Delta u}$ and $\sigma_{\Delta v}$ in terms of σ_u and σ_v, respectively.
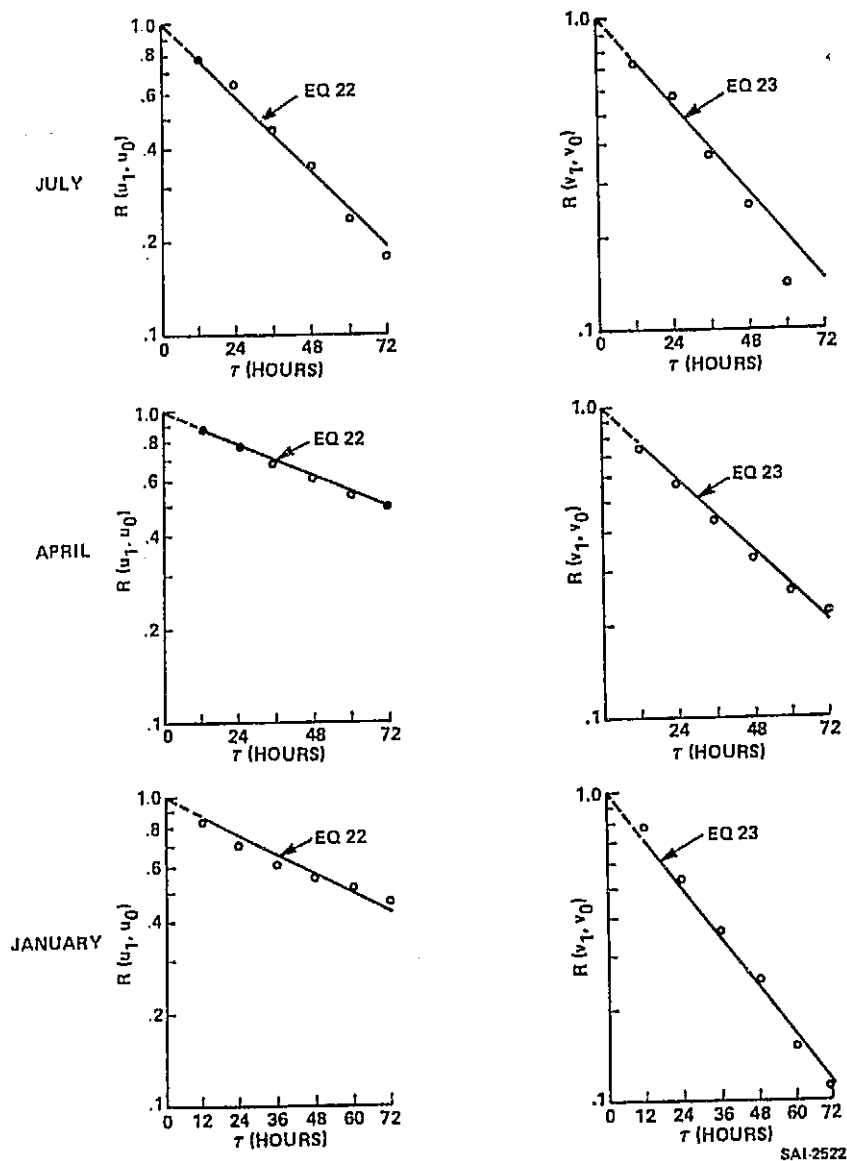
Figure 1.   Zonal and Meridional Wind Component Auto-
            correlation at 12 km at Cape Kennedy,
            Florida (1956-70)

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$$\sigma_{\Delta u} = \sqrt{2} \ \sigma_u \sqrt{1 - \text{EXP} \ (-b\tau)} \qquad (24)$$

$$\sigma_{\Delta v} = \sqrt{2} \ \sigma_v \sqrt{1 - \text{EXP} \ (-c\tau)} \qquad (25)$$

Equations 24 and 25 indicate that $\sigma_{\Delta u}$ and $\sigma_{\Delta v}$ are asymptotic to $\sqrt{2} \ \sigma_u$ and $\sqrt{2} \ \sigma_v$ for large values of τ. Therefore, estimates of the extreme value of $\sigma_{\Delta u}$ and $\sigma_{\Delta v}$ are obtained by setting τ equal to ∞ in equations 24 and 25.

The calculated values of b and c for KSC during January, April and July are plotted in Figures 2 through 4. The calculated and observed values of $\sigma_{\Delta u}(\tau)$ and $\sigma_{\Delta v}(\tau)$ at 1, 6, 12, 18 and 24 km during January, April and July are listed in Tables 1 through 3. The estimated extreme values of $\sigma_{\Delta u}$ and $\sigma_{\Delta v}$, ($\sqrt{2} \ \sigma_u$ and $\sqrt{2} \ \sigma_v$, respectively), are listed at the bottom of each column of calculated values. The comparisons in Tables 1 through 3 indicate that $\sigma_{\Delta u}$ and $\sigma_{\Delta v}$ can be accurately estimated by application of Equations 24 and 25, respectively. General application of this estimation technique at other locations utilizing published statistics of wind component standard deviations (as in [4] for example) would require a more adequate knowledge of the form of the autocorrelation function than is presently available.

The theoretical distribution of wind component differences has been derived from sample estimates of $\sigma_{\Delta u}$ and $\sigma_{\Delta v}$ and $\overline{\Delta u}$ and $\overline{\Delta v}$ (given in the appendix) for the intervals of 12, 24, 36 and 48 hours during January, April and July at 12 km over Cape Kennedy; the theoretical normal distributions are plotted as straight lines in Figures 5 through 10; the plotted symbols represent the observed distributions of Δu and Δv. It is indicated that the observed distribution of component changes is either accurately or conservately represented by the theoretical normal distribution for probabilities from .023 to .977.

The plot shows constants b and c plotted against altitude Z (KM) on the vertical axis and $10^2 b$ (HOURS^{-1}), $10^2 c$ (HOURS^{-1}) on the horizontal axis.

(1) DATA DO NOT SUPPORT VALIDITY
OF EQUATION 21 AT ALTITUDES
FROM 21 TO 26 KM.

LEGEND:

● b
X c

SAI-2443
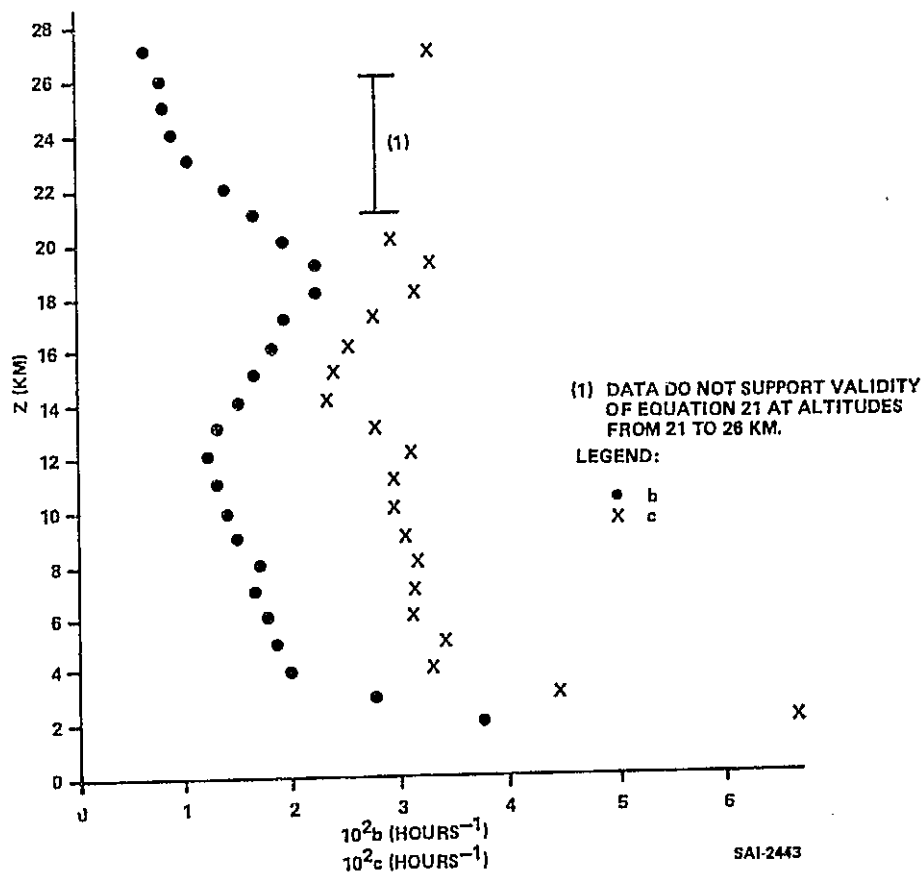
Figure 2. Constants b and c of Equations 24 and 25 for Cape Kennedy during January (1956-70)
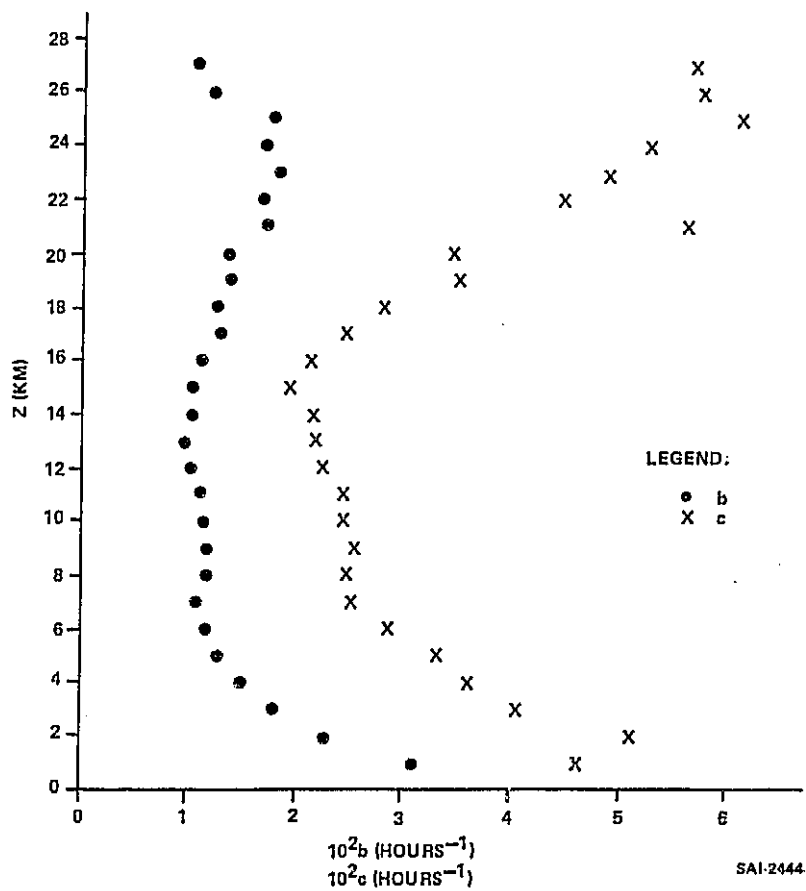
Figure 3. Constants b and c of Equations 24 and 25 for Cape Kennedy during April

28

26

24

22 (1) (2)

20

18

Z (KM)

16

14

12

10

8

6

4

2

0

0 1 2 3 4 5 6

(1) DATA DO NOT SUPPORT VALIDITY
OF EQUATION 20 AT ALTITUDES
FROM 17 TO 27 KM.
(2) DATA DO NOT SUPPORT VALIDITY
OF EQUATION 21 AT ALTITUDES
FROM 16 TO 27 KM.

LEGEND:

● b
X c

$10^2 b$ (HOURS^{-1})
$10^2 c$ (HOURS^{-1})

SAI-2442
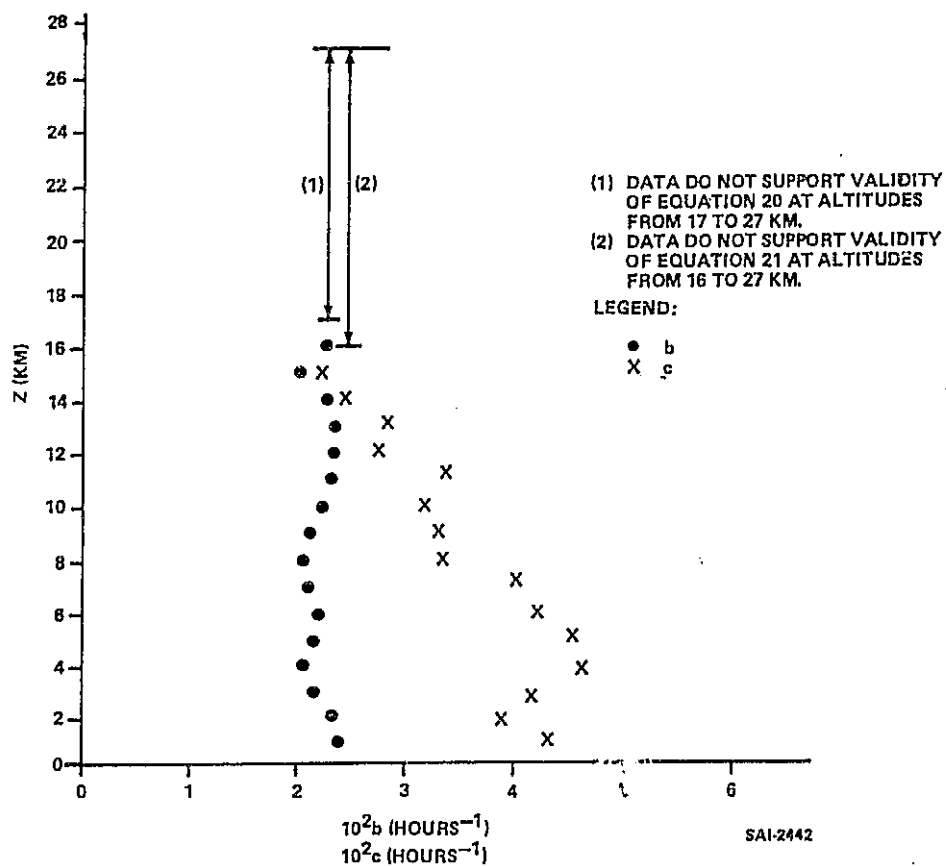
Figure 4.   Constants b and c of Equations 24 and
25 for Cape Kennedy during July (1956-70)

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Table 1. Calculated [Eqs. 24, 25] and Observed $\sigma_{\Delta u}$ and $\sigma_{\Delta v}$ during January at Cape Kennedy at 1, 6, 12, 18 and 24 KM

	τ (Hours)	$\sigma_{\Delta u}$ Calc.	$\sigma_{\Delta u}$ Obs.	$\sigma_{\Delta v}$ Calc.	$\sigma_{\Delta v}$ Obs.
24 KM	12	4.09	5.63		4.07
	24	5.63	6.36		4.09
	36	6.72	7.08		4.69
	48	7.58	7.56	*	4.67
	60	8.27	8.14		5.06
	72	8.85	8.51		4.99
	∞	12.91	–		
18 KM	12	5.31	6.60	4.59	4.44
	24	7.06	7.36	5.96	5.40
	36	8.15	8.35	6.75	6.29
	48	8.90	8.94	7.24	6.94
	60	9.43	9.49	7.56	7.49
	72	9.82	9.78	7.78	7.75
	∞	11.02	–	8.23	–
12 KM	12	7.69	8.70	11.48	9.94
	24	10.51	11.62	14.93	14.20
	36	12.45	13.34	16.92	16.54
	48	13.92	14.47	18.17	17.86
	60	15.08	15.18	18.98	18.88
	72	16.02	15.87	19.53	19.36
	∞	21.17	–	20.70	–
6 KM	12	6.05	6.58	7.53	7.73
	24	8.13	8.45	9.79	10.29
	36	9.49	9.90	11.09	11.48
	48	10.47	10.80	11.90	12.18
	60	11.19	11.22	12.44	12.27
	72	11.75	11.76	12.79	12.32
	∞	13.86	–	13.55	–
1 KM	12	6.92	5.64	7.70	5.82
	24	8.52	8.04	8.63	7.73
	36	9.23	9.31	8.85	8.86
	48	9.58	9.70	8.90	9.23
	60	9.75	9.70	8.92	9.10
	72	9.84	9.62	8.92	8.87
	∞	9.93	–	8.92	–

*Validity of Eq. 25 not supported by the data at 24 KM

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Table 2. Calculated [Eqs. 24, 25] and Observed $\sigma_{\Delta u}$ and $\sigma_{\Delta v}$ During April at Cape Kennedy at 1, 6, 12, 18 and 24 KM

	τ (Hours)	$\sigma_{\Delta u}$ Calc.	Obs.	$\sigma_{\Delta v}$ Calc.	Obs.
24 KM	12	3.14	4.06	2.86	3.42
	24	4.24	4.41	3.55	3.36
	36	4.97	4.94	3.86	3.90
	48	5.49	5.23	4.02	3.93
	60	5.89	5.81	4.11	4.16
	72	6.19	6.11	4.15	4.24
	∞	7.45	–	4.20	–
18 KM	12	4.08	5.35	3.93	4.00
	24	5.57	6.27	5.15	5.01
	36	6.60	6.91	5.87	5.81
	48	7.37	7.46	6.34	6.34
	60	7.98	7.80	6.65	6.62
	72	8.47	7.89	6.87	6.78
	∞	11.10	–	7.40	–
12 KM	12	8.25	8.31	9.51	9.81
	24	11.33	11.29	12.65	12.88
	36	13.48	13.55	14.60	14.82
	48	15.14	15.04	15.94	16.05
	60	16.47	16.27	16.90	16.87
	72	17.57	17.10	17.59	17.34
	∞	24.52	–	19.71	–
6 KM	12	5.38	5.78	5.53	5.69
	24	7.35	7.71	7.24	7.27
	36	8.72	9.02	8.24	8.57
	48	9.76	9.70	8.89	9.18
	60	10.58	10.45	9.32	9.38
	72	11.25	10.93	9.61	9.33
	∞	15.03	–	10.31	–
1 KM	12	5.16	4.99	4.84	4.69
	24	6.71	6.83	6.08	6.08
	36	7.60	8.07	6.69	7.15
	48	8.16	8.34	7.02	7.45
	60	8.52	8.40	7.20	7.50
	72	8.76	8.27	7.30	7.48
	∞	9.28	–	7.44	–

Table 3. Calculated [Eqs. 24, 25] and Observed $\sigma_{\Delta u}$ and $\sigma_{\Delta v}$ during July at Cape Kennedy at 1, 6, 12, 18 and 24 KM

	τ (Hours)	$\sigma_{\Delta u}$ Calc.	Obs.	$\sigma_{\Delta v}$ Calc.	Obs.
24 KM	12		4.06		4.11
	24		3.91		3.59
	36		4.18		4.13
	48	*	4.13	*	3.57
	60		4.53		4.15
	72		4.36		3.75
	∞		–		–
18 KM	12		3.17		3.84
	24		2.99		3.14
	36		3.50		3.95
	48	*	3.66	*	3.63
	60		3.78		4.03
	72		3.88		3.79
	∞		–		–
12 KM	12	6.76	6.46	5.54	5.49
	24	8.97	8.23	7.27	6.90
	36	10.34	10.17	8.29	8.27
	48	11.26	11.08	8.96	8.97
	60	11.92	11.98	9.42	9.61
	72	12.39	12.29	9.73	9.85
	∞	13.77	–	10.51	–
6 KM	12	3.33	3.45	3.68	3.66
	24	4.43	4.21	4.66	4.12
	36	5.13	5.12	5.16	4.94
	48	5.60	5.54	5.45	5.30
	60	5.94	5.95	5.61	5.59
	72	6.19	6.19	5.71	5.69
	∞	6.97	–	5.85	–
1 KM	12	3.09	2.95	2.95	3.06
	24	4.09	3.46	3.74	3.37
	36	4.71	4.45	4.14	4.06
	48	5.12	4.95	4.36	4.26
	60	5.42	5.51	4.49	4.51
	72	5.62	5.74	4.57	4.49
	∞	6.22	–	4.68	–

*Validity of Eqs. 24 and 25 not supported by the data at 18 and 24 KM
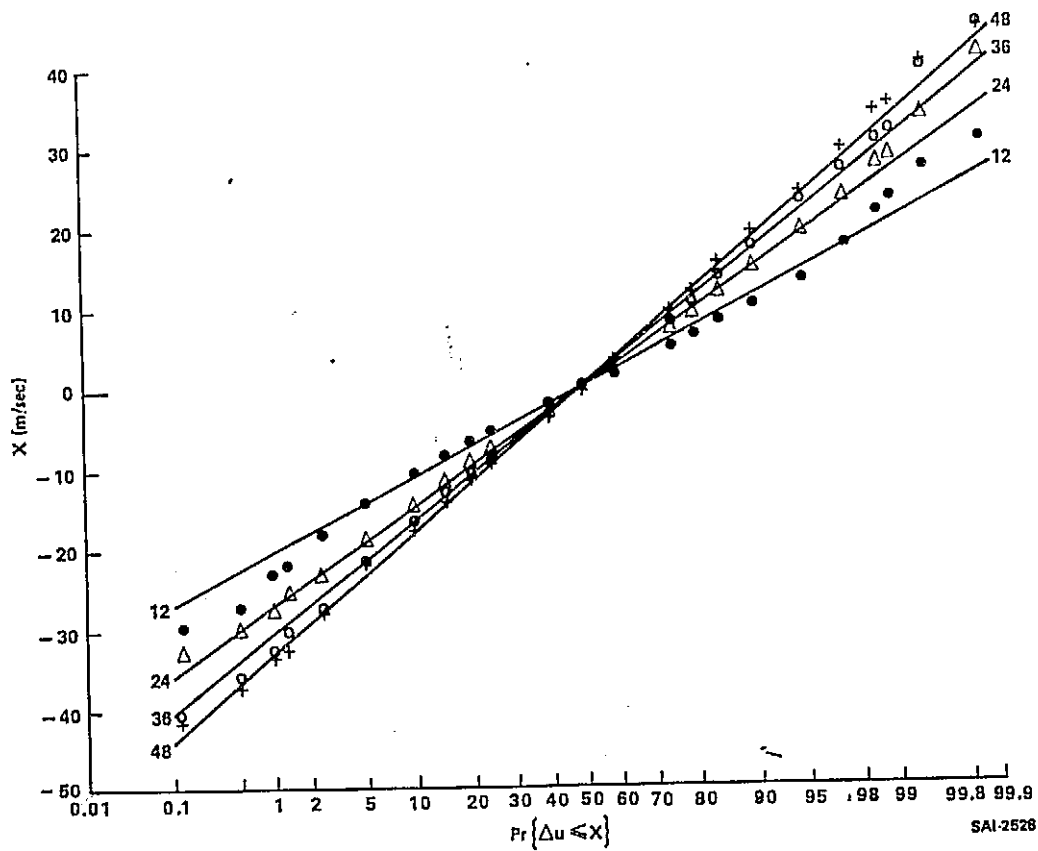
Figure 5.   Theoretical (straight lines) and observed
(plotted points) cumulative probability
distribution of zonal wind component
change, Δu, with respect to time increment,
τ, during January at 12 km at Cape Kennedy
(1956-70)

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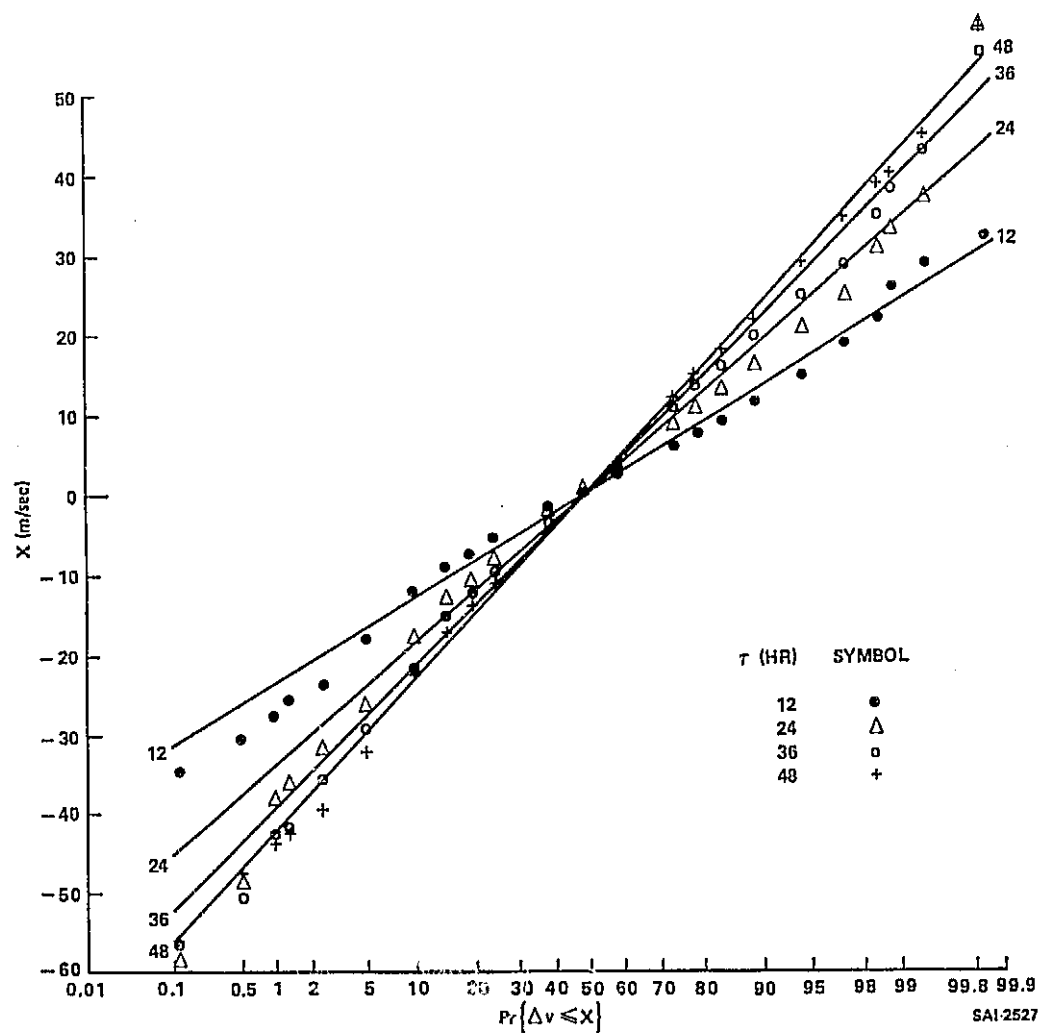
Figure 6. Theoretical (straight lines) and observed
(plotted points) cumulative probability
distribution of meridional wind component
change, Δv, with respect to time increment,
τ, during January at 12 km at Cape Kennedy
(1956-70)
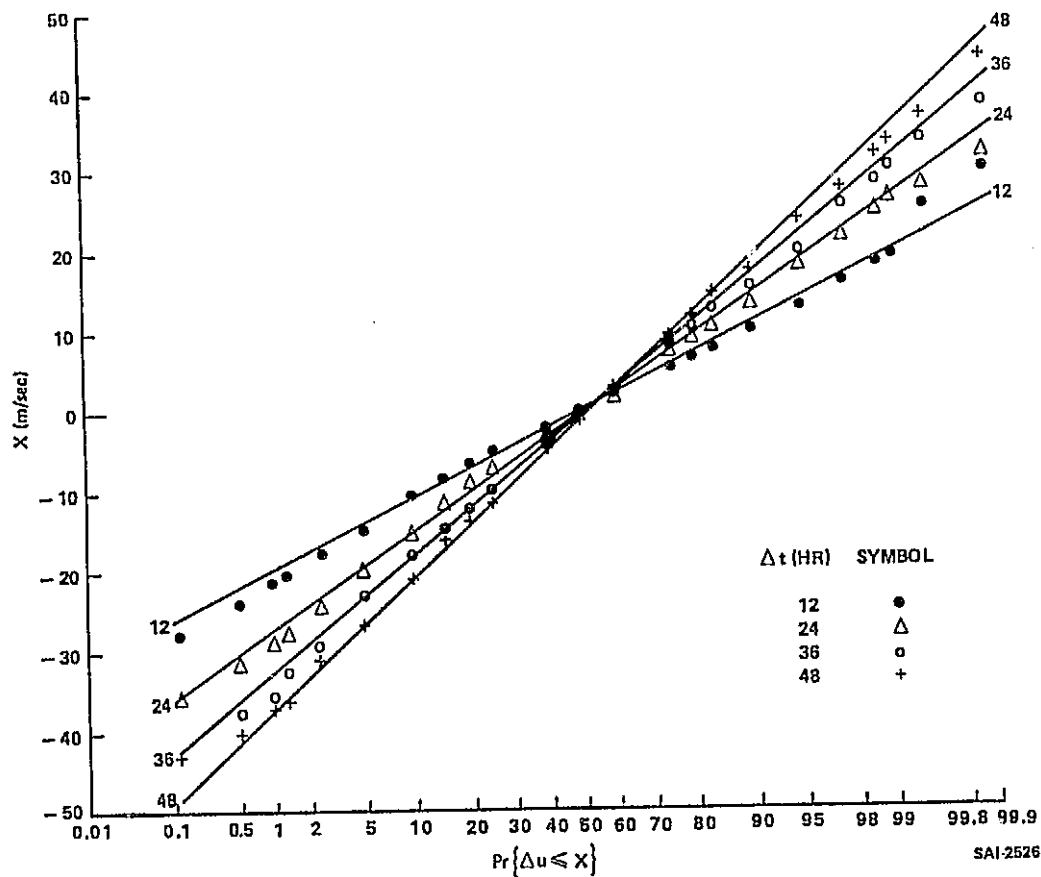
Figure 7. Theoretical (straight lines) and observed (plotted points) cumulative probability distribution of zonal wind component changes, Δu, with respect to time increment, τ, during April at 12 km at Cape Kennedy (1956-70)

19
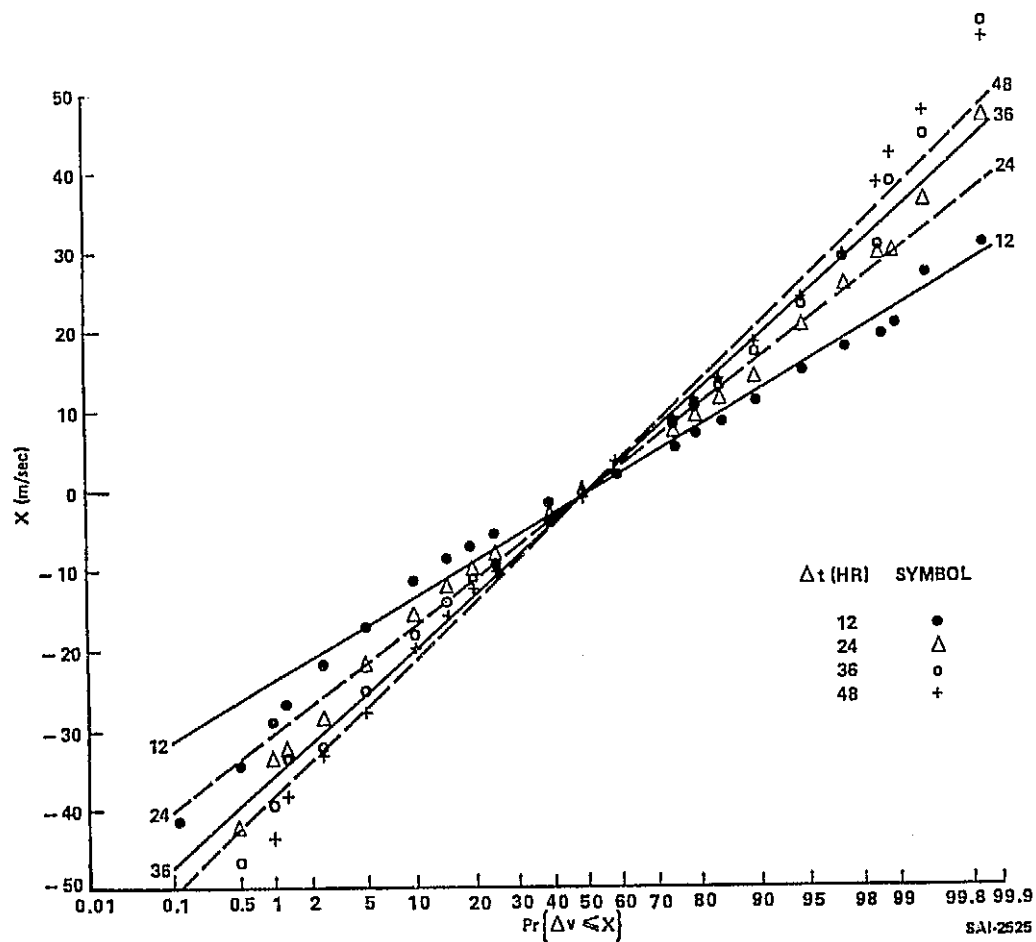
Figure 8. Theoretical (straight lines) and observed
(plotted points) cumulative probability
distribution of meridional wind component
change, Δv, with respect to time increment,
τ, during April at 12 km at Cape Kennedy
(1956-70)
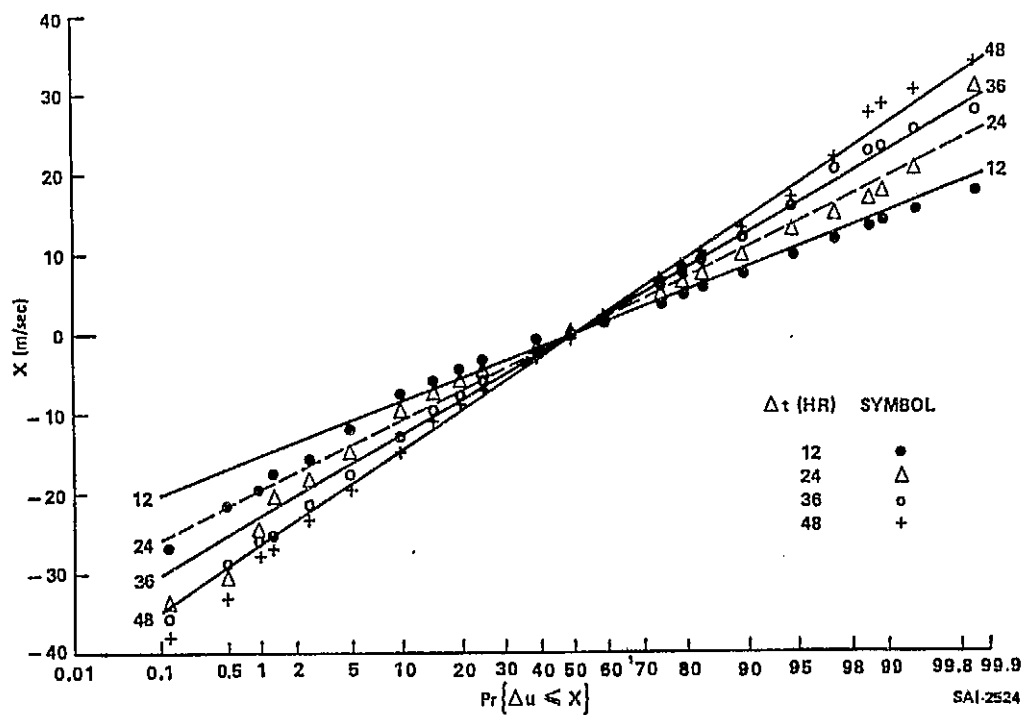
Figure 9. Theoretical (straight lines) and observed
plotted points) cumulative probability
distribution of zonal wind component
change, Δu, with respect to time increment,
τ, during July at 12 km at Cape Kennedy
(1956-70)
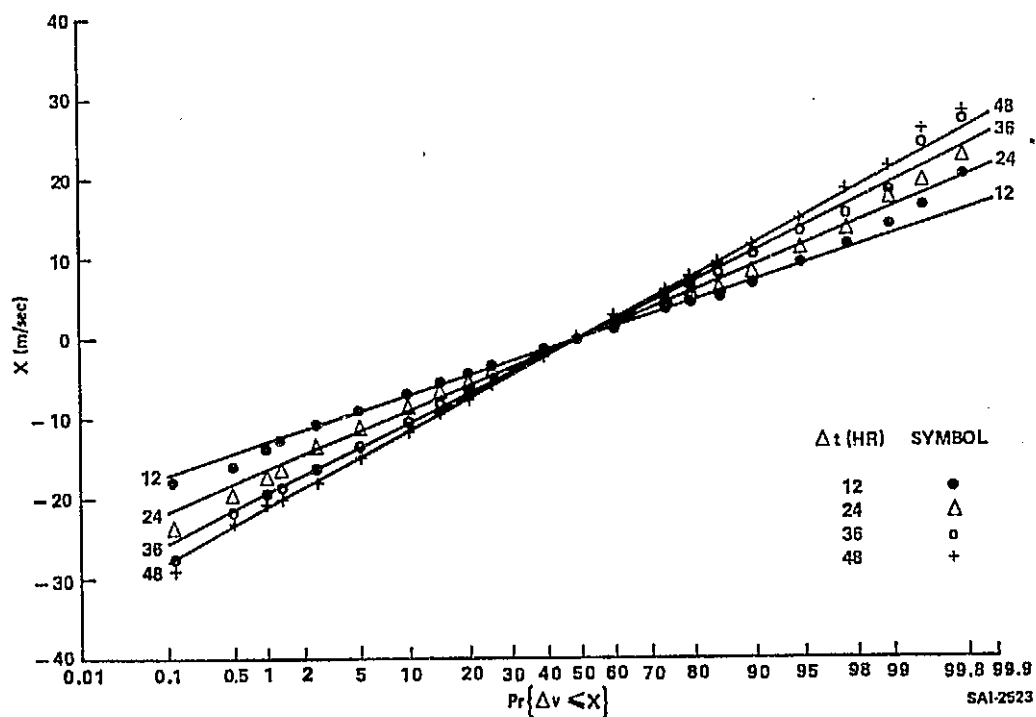
Figure 10. Theoretical (straight lines) and observed (plotted points) cumulative probability distribution of meridional wind component change, Δv, with respect to time increment, τ, during July at 12 km at Cape Kennedy (1956-70)

22

C. JOINT DISTRIBUTION OF WIND COMPONENT CHANGES WITH RESPECT TO TIME

The joint distribution of zonal and meridional wind component changes with respect to time (Δu and Δv) can be approximated by a bivariate normal distribution. A useful property of such a distribution is that an ellipse can be calculated which contains the end points of a specified percent of vectors having components Δu and Δv. A detailed description of the derivation of probability ellipses and plotting methodology is given by Smith [2]. The five parameters of the bivariate normal distribution of Δu and Δv, calculated for each monthly reference period at Cape Kennedy at 1 km altitude intervals from 0 to 27 km are listed in the appendix.

The degree of approximation of the bivariate normal distribution to the observed distribution can be evaluated by comparison of the observed percentage of vectors which are contained within the ellipse to that predicted by the ellipse at a specified probability level. For example, for a sample of 1,000 vectors, 950 of the vectors should terminate within the 95 percent (theoretical P = .95) ellipse calculated from the bivariate statistics of the 1,000 vectors; however, a plot of the 1,000 vectors could indicate that only 45 vectors (observed P=.955) terminate within the 95 percent ellipse. For illustration on a linear graph comparison of the theoretical to the observed P is given in terms of the parameter λ_e given by

$$\lambda_e = \sqrt{2} \ \sqrt{- \ln (1-P)} \qquad (26)$$

A comparison of theoretical and observed values of λ_e for January, July and April at 12 km for time intervals of 12, 24, 36 and 48 hours is illustrated in Figures 11 thru 13. Perfect agreement between theoretical and observed λ_e is represented by a line drawn from the origin with a slope, B, equal to 1. The calculated least squares slopes are given in

23
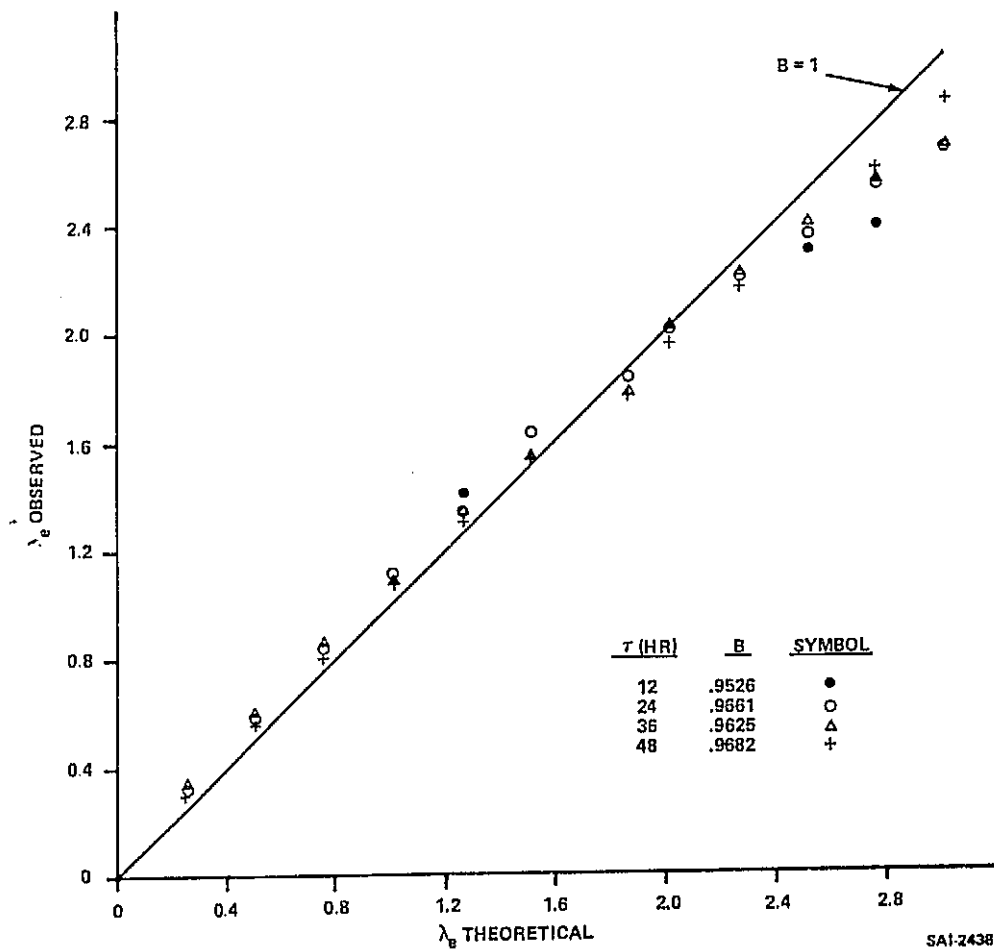
Figure 11. Observed λ_e as a Function of Theoretical λ_e for a Bivariate Normal Distribution of Wind Component Changes (Δu, Δv) with Respect to Time at 12 KM During January (1956-70) at KSC
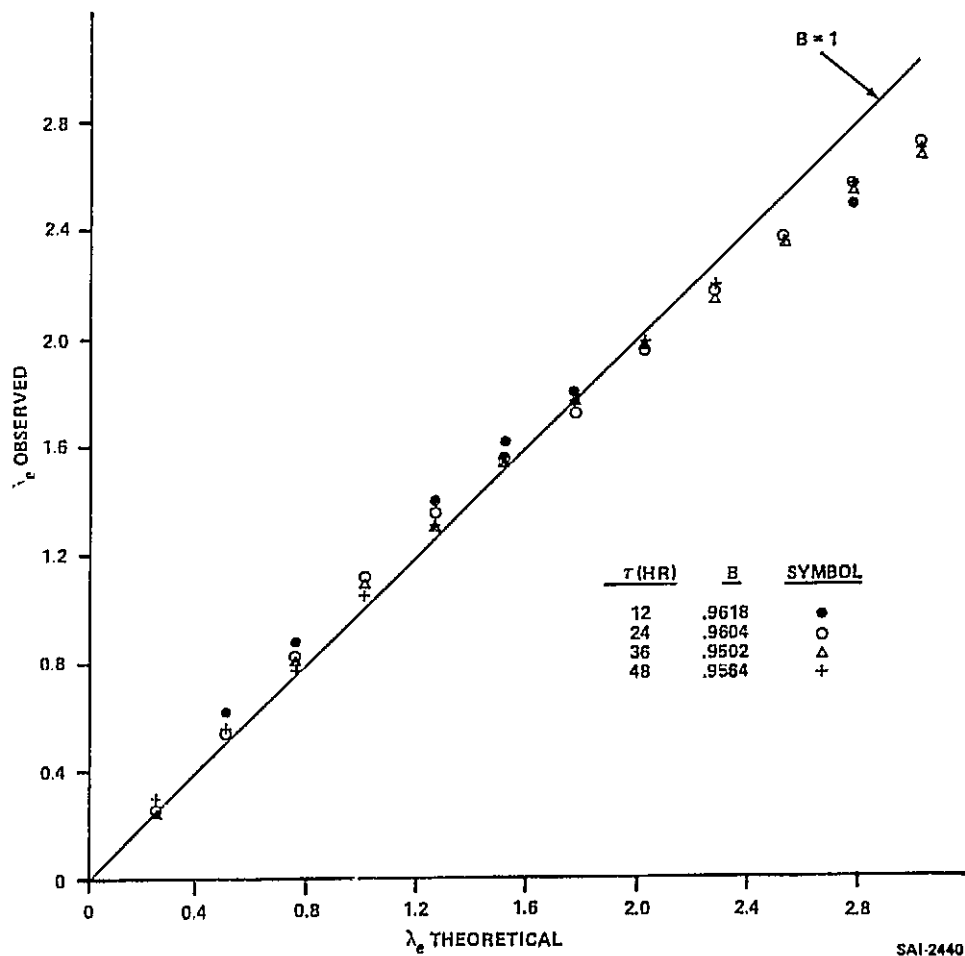
Figure 12. Observed λ_e as a Function of Theoretical λ_e for a Bivariate Normal Distribution of Wind Component Changes (Δu, Δv) with Respect to Time at 12 KM During April (1956-70) at KSC
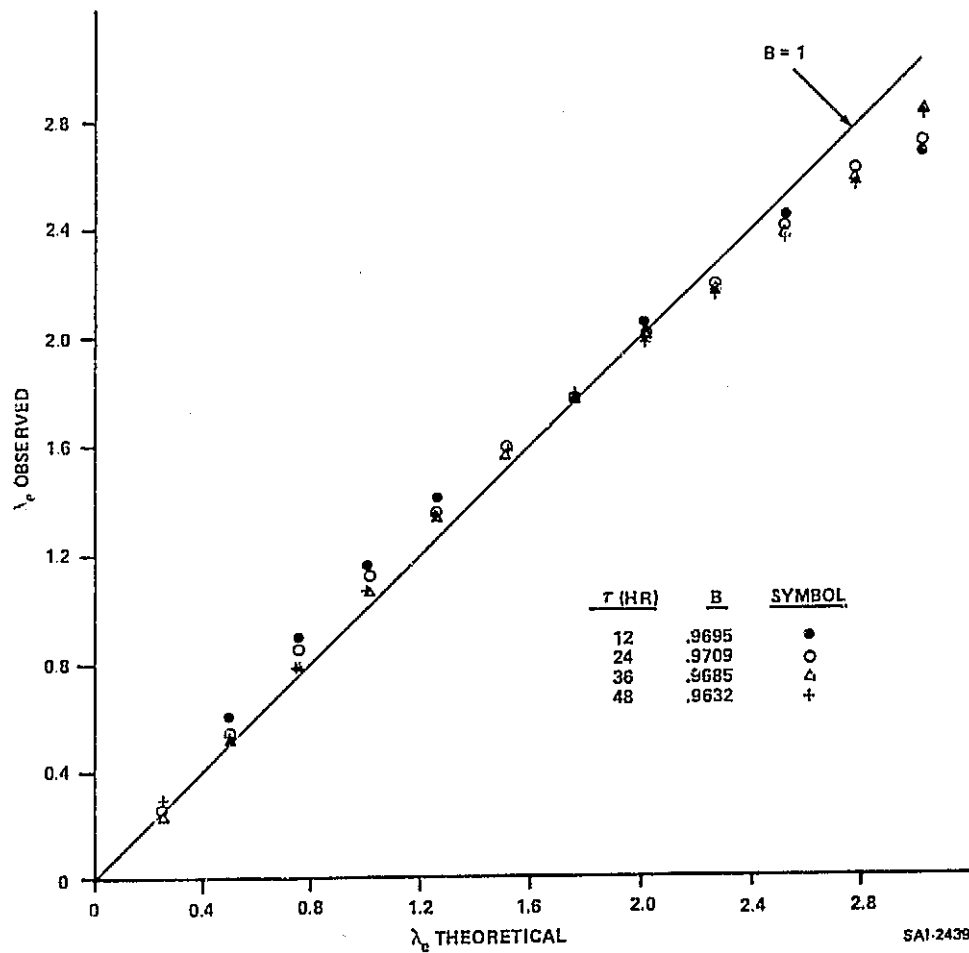
Figure 13.   Observed λ_e as a Function of Theoretical λ_e for a Bivariate Normal Distribution of Wind Component Changes (Δu, Δv) with Respect to Time During July (1956-70) at 12 KM at KSC

the figure legend. The plots indicate an agreement between theory and observation for $P \leq .95$ ($\lambda_e \leq 2.4477$). For $P > .95$ the theoretical λ_e exceeds the observed λ_e. The interpretation of these results is that for extreme probabilities the theoretical distributions predict fewer wind change vectors terminating outside the ellipse than is observed. These results may have to be taken into consideration if engineering application of theoretical wind change statistics beyond the 95 percent level is required.

The 95 percent probability ellipses for the joint distribution of wind component changes with respect to time at 6, 12, 18 and 24 km during January, April and July are illustrated in Figure 14; the relatively small changes with respect to time during July, the similarities between April and January and the large changes at 12 km are clearly illustrated.
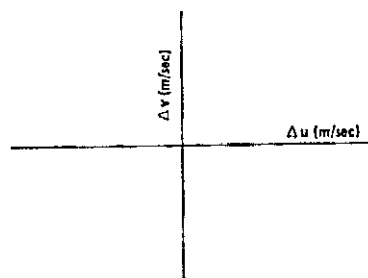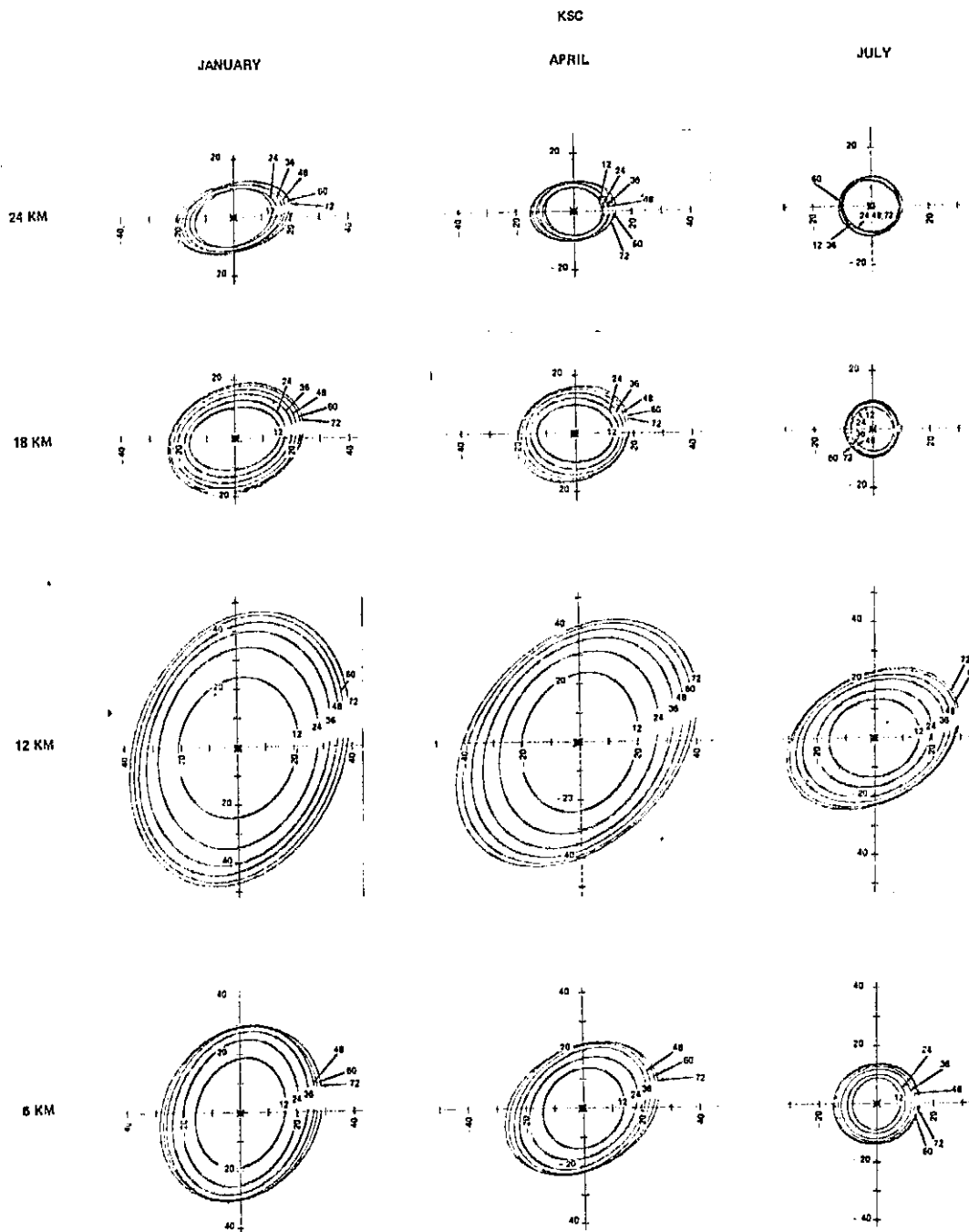
Figure 14. January, April and July 95 Percent Wind Change
Ellipses for Time Increments of 12, 24, 36, 48, 60
and 72 Hours at 6, 12, 18 and 24 KM Over KSC

D. MODULUS OF VECTOR WIND CHANGE WITH RESPECT TO TIME

If wind changes with respect to time have a distribution which is bivariate normal, the modulus R, of the wind change vector (defined by Equation 6) has a Rayleigh distribution. Since the Rayleigh distribution cannot be integrated in closed form, numerical integration is required to obtain the cumulative probability distribution. Derivation of the Rayleigh distribution, given the five bivariate normal distribution statistics, requires summation involving products of the modified Bessel function of the first kind. Smith [2] summarizes the basic equations for the Rayleigh distribution derived by Wier [3] and extended by Yadavalli [4] to include the condition for correlated variables. The Rayleigh distribution reduces to the integrable classical form if it is assumed that the components of the vector wind change are independent and that they have zero means and equal standard deviations; the classical Rayleigh probability density function is

$$f(R) = \frac{R}{\sigma^2} \, EXP \; (-R^2/2\sigma^2) \qquad R \gtreqless 0 \qquad (27)$$

Integration of Equation 27 from zero to a specified value of R yields the cummulative probability that $R \leq R*$ where,

$$Pr \left\{ R \leq R* \right\} = 1 - EXP \; (-R^2/2\sigma^2) \qquad R \gtreqless 0 \qquad (28)$$

where $\sigma = \sigma_{\Delta u} = \sigma_{\Delta v}$

Since the standard deviation of the component difference can be expressed as a function of the standard deviation of the components (Equations 24 and 25) it follows that

$$Pr \left\{ R \leq R* \right\} = 1 - EXP \left[- \frac{R^2}{4\sigma_k^2 \, [1-EXP \; (-k\tau)]} \right] \qquad (29)$$

where σ_k and k correspond to either σ_u and b or σ_v and C given in Equations 24 and 25.

An expression for R given a particular probability, Pr [R $\leq$ R*], is obtained by solution of Equation 29 to obtain

$$R = \sqrt{2} \ \lambda_e \sigma_k \sqrt{1 - EXP \ (-k\tau)} \tag{30}$$

where λ_e is derived from Equation 26 denoting Pr [R $\leq$ R*] by P

The choice of $\sigma_k = \sigma_v$ and k = c (from Equation 25) at 12 km during January, April, and July yields the most accurate approximation of the cummulative Rayleigh distribution obtained by numerical integration of Equation 28 in Reference 1. A comparison of the 99, 95, and 50 percentile modulus of the wind change vector with respect to time based on the Rayleigh (Equation 28, Reference 1) and the classical Rayleigh (Equation 29) is illustrated in Figure 15; the rather good agreement indicated for April at 12 km for time intervals from 12 to 72 hours is attributable to the accuracy of the simplifying assumptions described above.

The remaining question is: How well do these theoretical distributions compare with observed distributions? Comparisons of observed and theoretical values of R for time intervals of 12, 24, 36 and 48 hours at 12 km during January, April and July at KSC are given in Tables 4 through 6; column II of the tables contain R calculated according to the classical Rayleigh distribution with σ equal to the monthly value of σ_v at 12 km and k equal to the decay constant in the monthly exponential least squares fit to the v component autocorrelation function (Equation 23); column I was obtained by numerical integration of the Rayleigh distribution. It is indicated that the observed cumulative distribution agrees fairly well with the theoretical distribution for probabilities less than .95; the observed distribution exceeds the theoretical distribution for probabilities greater than .95.
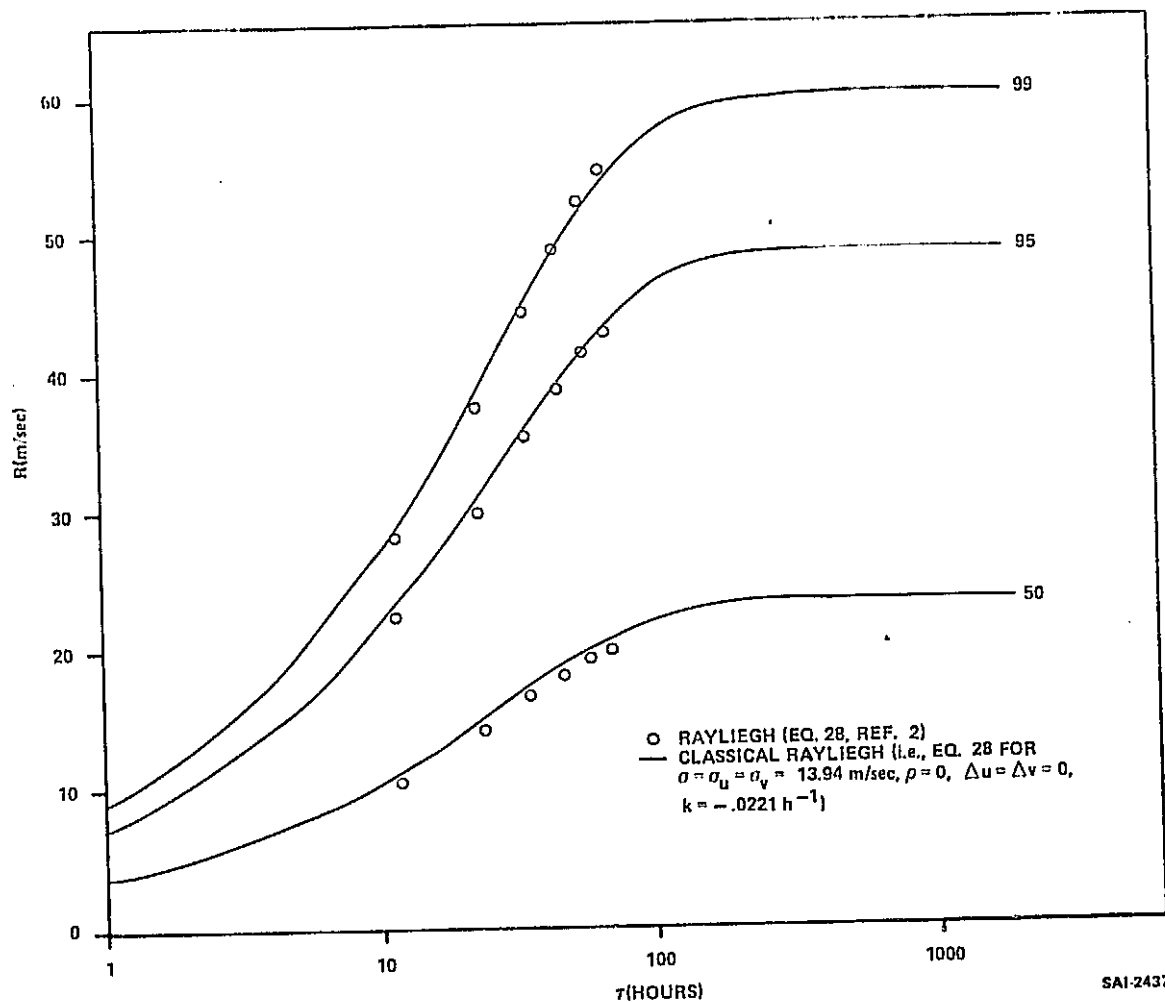
Figure 15. April Theoretical Percentiles of Modulus of Vector Wind Change (R) with Respect to Time Interval (τ) at 12 km Over KSC (1956-70)

τ(Hours)	12			24			36			48		
Pr{R ≤ R*}	I	II	OBSERVED	I	II	OBSERVED	I	II	OBSERVED	I	II	OBSERVED
.50	10.94	13.51	9.62	15.13	17.58	13.74	1?.47	19.92	16.05	18.86	21.39	17.76
.60	12.60	15.54	11.20	17.43	20.22	16.02	20.?3	22.90	18.96	21.74	24.59	20.83
.75	14.26	19.11	21.52	20.02	24.86	24.88	24.42	28.17	26.90	26.40	30.25	26.40
.80	16.74	20.59	15.72	23.22	26.79	21.92	26.88	30.35	26.74	29.06	32.59	29.18
.84134	17.92	22.02	17.51	24.??	28.65	23.92	28.82	32.46	28.59	31.17	34.86	31.97
.850	18.20	22.36	17.77	25.27	29.08	24.34	29.27	32.95	29.08	31.66	35.38	32.34
.900	20.07	24.63	21.04	27.92	32.04	28.75	32.38	36.30	32.36	35.04	38.98	35.43
.95	22.96	28.09	25.75	32.00	36.55	35.21	37.19	41.41	40.17	40.29	44.46	42.45
.97502	25.57	31.18	29.46	35.71	40.57	39.59	41.55	45.96	44.29	45.03	49.35	46.95
.97725	25.88	31.57	29.81	36.18	41.08	40.21	42.09	46.53	44.64	45.66	49.97	47.92
.98734	27.88	33.93	33.31	39.02	44.14	45.23	45.48	50.01	50.41	49.35	53.70	53.06
.99000	28.66	34.83	33.92	40.13	45.32	49.70	46.78	51.34	51.70	50.77	55.13	53.67
.99500	30.81	37.36	39.12	43.24	48.61	57.35	50.46	55.07	58.17	54.79	59.13	56.78
.99865	34.57	41.73	41.74	48.65	54.28	60.74	56.86	61.50	64.86	61.80	66.03	61.74

COLUMN I: CALCULATIONS OF R BASED ON EQS. 28a AND 28b OF REF. 1 AND NUMERICAL INTEGRATION OF THE RAYLIEGH PROBABILITY DENSITY FUNCTION.

COLUMN II: CALCULATIONS OF R BASED ON EQ. 30 OF THIS TEXT AND ASSUMING $\sigma = \sigma_v = 14.64$ m/sec, $K = C = .0306$ hr^{-1} AND $\Delta u = \Delta v = 0$.

SAI-2446

Table 4. Theoretical and observed modulus, R, of vector wind change with respect to time for Cape Kennedy during January (1956-70) at 12 km

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τ (HOURS)	12			24			36			48		
Pr{R ≤ R*}	I	II	Observed	I	II	Observed	I	II	Observed	I	II	Observed
.50	10.62	11.20	9.28	14.11	14.89	12.63	16.51	17.19	14.81	18.05	18.77	16.76
.60	12.23	12.88	10.93	16.26	17.12	14.77	19.02	19.77	17.81	20.82	21.58	19.46
.75	15.09	15.84	14.23	20.08	21.06	19.21	23.53	24.32	22.26	25.76	26.54	24.35
.80	16.29	17.07	15.62	21.69	22.69	21.13	25.41	26.20	24.06	27.83	28.60	26.88
.84134	17.45	18.26	16.87	23.24	24.27	23.14	27.24	28.02	26.59	29.85	30.59	28.66
.850	17.67	18.53	17.27	23.55	24.64	23.25	27.64	28.44	27.20	30.32	31.05	29.18
.900	19.58	20.42	19.78	26.08	27.14	26.20	30.62	31.34	30.77	23.57	34.21	33.37
.95	22.43	23.29	23.71	29.92	30.96	32.67	35.17	35.74	37.78	38.60	39.02	40.20
.97502	24.97	25.85	28.76	33.41	34.35	36.26	39.30	39.67	43.51	43.15	43.30	46.76
.97725	25.32	26.17	29.31	33.81	34.79	37.13	39.80	40.17	44.52	43.70	43.85	47.51
.98734	27.31	28.13	34.20	36.54	37.39	42.30	43.02	43.16	49.61	47.28	47.12	57.80
.99000	28.05	28.88	35.00	37.58	38.39	44.00	44.27	44.32	52.00	48.65	48.38	58.67
.99500	30.22	30.97	40.50	40.50	41.17	48.25	47.76	47.54	57.75	52.51	51.89	63.25
.99865	33.95	34.59	43.78	45.59	45.98	56.57	53.83	53.09	62.78	59.23	57.95	66.78

COLUMN I: CALCULATIONS OF R BASED ON EQS. 28a AND 28b OF REF. 1 AND NUMERICAL INTEGRATION OF THE RAYLIEGH PROBABILITY DENSITY FUNCTION

COLUMN II: CALCULATIONS OF R BASED ON EQ. 30 OF THIS TEXT AND ASSUMING $\sigma = \sigma_v = 13.94$ m/sec, $K = C = .0221$ hr^{-1} AND $\Delta u = \Delta v = 0.$

SAI-2416

Table 5. Theoretical and observed modulus, R, of vector wind change with respect to time for Cape Kennedy during April (1956-70) at 12 km

τ(Hours)	12			24			36			48		
$\Pr\{R \leq R^*\}$	I	II	OBSERVED	I	II	OBSERVED	I	II	OBSERVED	I	II	OBSERVED
.50	7.02	6.52	6.07	8.85	8.55	7.94	10.76	9.77	10.12	11.68	10.55	10.63
.60	8.08	7.49	7.28	10.20	9.84	9.19	12.41	11.23	11.64	13.48	12.13	12.20
.75	9.96	9.22	9.40	12.60	12.10	11.86	15.35	13.81	14.56	16.68	14.93	16.09
.80	10.75	9.93	10.33	13.60	13.04	13.00	16.58	14.88	16.04	18.01	16.08	17.77
.84134	11.52	10.62	11.38	14.57	13.94	14.39	17.78	15.91	17.55	19.33	17.20	19.32
.850	11.70	10.78	11.65	14.79	14.15	14.69	18.05	16.16	17.93	19.64	17.46	19.72
.900	12.89	12.89	13.35	16.36	15.59	16.35	19.97	17.80	20.50	21.75	19.24	22.13
.95	14.77	13.55	15.62	18.75	17.79	19.75	22.95	20.30	24.47	25.00	21.94	26.55
.97502	16.45	15.04	18.95	20.90	19.74	21.98	25.67	22.53	26.72	27.96	24.35	30.55
.97725	16.66	15.23	19.31	21.19	19.99	23.92	25.99	22.81	26.98	28.36	24.66	30.97
.98734	17.91	16.37	20.87	22.86	21.48	28.41	28.10	24.52	30.23	30.67	26.50	33.61
.99000	18.44	16.80	21.85	23.52	22.05	29.70	28.91	25.17	31.85	31.56	27.20	35.35
.99500	19.82	18.02	26.45	25.34	23.65	32.78	31.20	27.00	37.35	34.04	29.18	38.35
.99865	22.24	20.13	30.74	28.52	26.41	38.74	35.18	30.15	42.74	38.44	32.58	44.74

COLUMN 1: CALCULATIONS OF R BASED ON EQS. 28a AND 28b OF REF. 1 AND NUMERICAL INTEGRATION OF THE RAYLIEGH PROBABILITY DENSITY FUNCTION.

COLUMN II: CALCULATIONS OF R BASED ON EQ. 30 OF THIS TEXT AND ASSUMING $\sigma = \sigma_v = 7.43$ m/sec, $K = C = .0271$ hr^{-1} AND $\Delta u = \Delta v = 0$.

SAI-2445

Table 6. Theoretical and observed modulus, R, of vector wind change with respect to time for Cape Kennedy during July (1956-70) at 12 km

E. CONDITIONAL VECTOR WIND ELLIPSES

Prior knowledge that environmental constraints necessary to assure the success of a space vehicle launch will be satisfied implies that there is a capability for prediction of environmental parameters; the prediction can be based on knowledge of conditions prior to launch. With regard to winds aloft, prior conditions are typically based on Rawinsonde or Jimsphere wind profiles. A typical question that could be posed before launch is: Given a measurement of the wind vector 12 hours prior to launch at 12 km, will the wind vector at launch time be within the monthly 95 percent reference month wind ellipse? A question of this type can be answered if the distribution of vector wind components at an initial time, T_O, and at a future time, T_1, can be approximated by a quadravariate normal distribution. Given the components of the vector at T_O, the conditional distribution of the vector wind at T_1 is bivariate normal. Smith [1] describes the derivation of the conditional bivariate normal distribution and documents the computer program used in this investigation for calculation of these distributions. Figures 16 thru 18 illustrate the 95 percent conditional bivariate normal distributions at 12 km that have been calculated for time increments of 12, 24, 36, 48, 60 and 72 hours for the months of January, April and July; five vectors were selected as given initial conditions for calculations of the conditional ellipses. The components of the vectors are defined below:

1. Monthly component means given by Falls [4].

2. Maximum zonal wind and the corresponding meridional wind from the monthly 95 percent vector wind ellipse.

3. Minimum zonal wind and the corresponding meridional wind from the monthly 95 percent vector wind ellipse.

4. Maximum meridional wind and the corresponding zonal wind from the monthly 95 percent vector wind ellipse.

5. Minimum meridional wind and the corresponding zonal wind from the monthly 95 percent vector wind ellipse.

The conditional ellipses illustrated at the center of Figures 16 through 18 show that if the observed wind vector has components equivalent to the monthly mean components (Condition 1) then 95 percent of the wind vectors after elapsed times as large as 72 hours will fall within the monthly 95 percent ellipse. Therefore satisfaction of a launch constraint which states that the wind vector must be included within the 95 percent monthly ellipse would be assured for periods as long as 72 hours following an observation of a wind vector having components which correspond to the monthly means. The conditional ellipses based on selection of given wind vectors that terminate on the monthly 95 percent ellipse (conditions 2 through 5) have a significant proportion of their area lying outside the monthly 95 percent ellipse; as the time increment increases this proportion decreases but remains significant for a time increment as large as 72 hours. This implies that a significant proportion of wind vectors will not satisfy a launch constraint based on the 95 percent wind ellipse for periods as long as 72 hours (or longer if these calculations are extended) following an observation of a wind vector which terminates on the 95 percent ellipse.

The wind direction characteristics of a wind ellipse can be described in terms of the angles associated with wind vectors constructed between the origin and the center of the ellipse (at the component means) and between the origin and the two tangent points to the ellipse. The three vectors constructed in this manner and the angles θ_A, θ_B, θ_E, $\Delta\theta_1$ and $\Delta\theta_2$ are illustrated in Figure 19; the range of wind angles, θ_R, is θ_A to θ_B. The angles θ_R, θ_E, $\Delta\theta_1$ and $\Delta\theta_2$ calculated from five 95 percent conditional ellipse for April at 6, 12, 18 and 24 km are listed in Table 7.
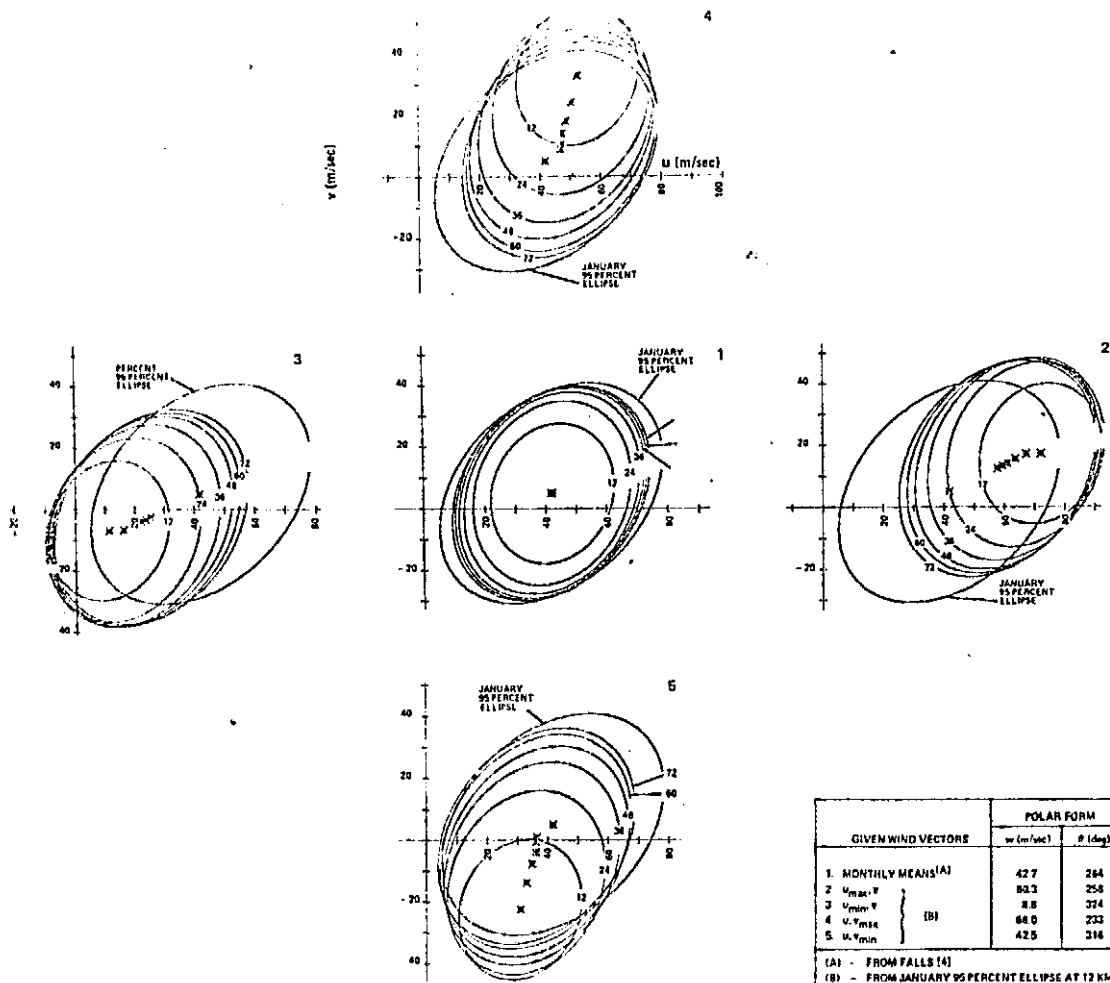
Figure 16.   January conditional 95 percent wind ellipses at
12 km for time increments of 12, 24, 36, 48, 60
and 72 hours at Cape Kennedy (1956-70)
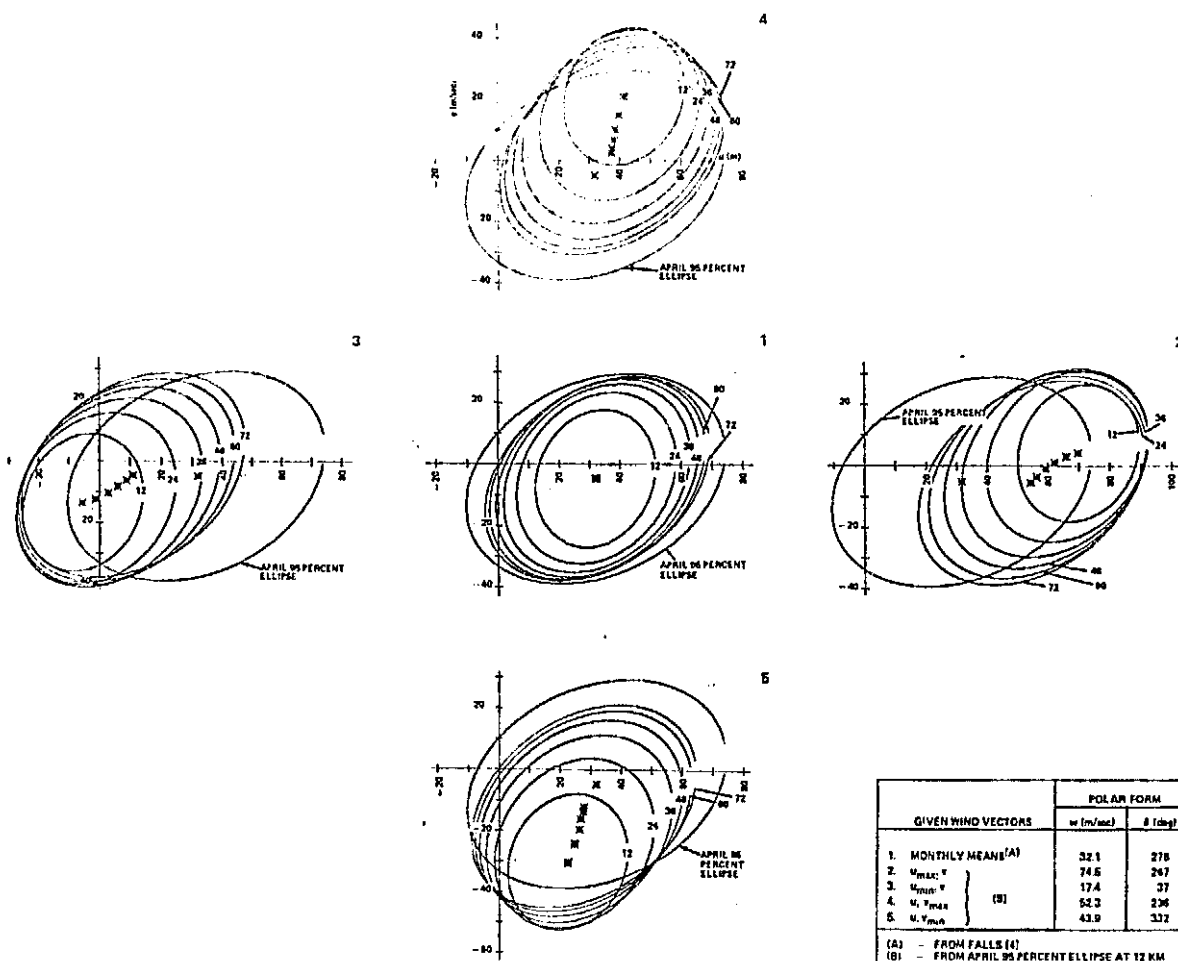
Figure 17. April conditional 95 percent wind ellipses at 12 km for time increments of 12, 24, 36, 48, 60 and 72 hours at Cape Kennedy (1956-70)

	POLAR FORM	
GIVEN WIND VECTORS	w (m/sec)	θ (deg)
1. MONTHLY MEANS [A]	3.9	35
2. u_{max}, v	22.0	263
3. u_{min}, v [B]	27.3	72
4. u, v_{max}	18.3	199
5. u, v_{min}	23.1	24

[A] — FROM FALLS [4]
[B] — FROM JULY 95 PERCENT ELLIPSE AT 12 KM
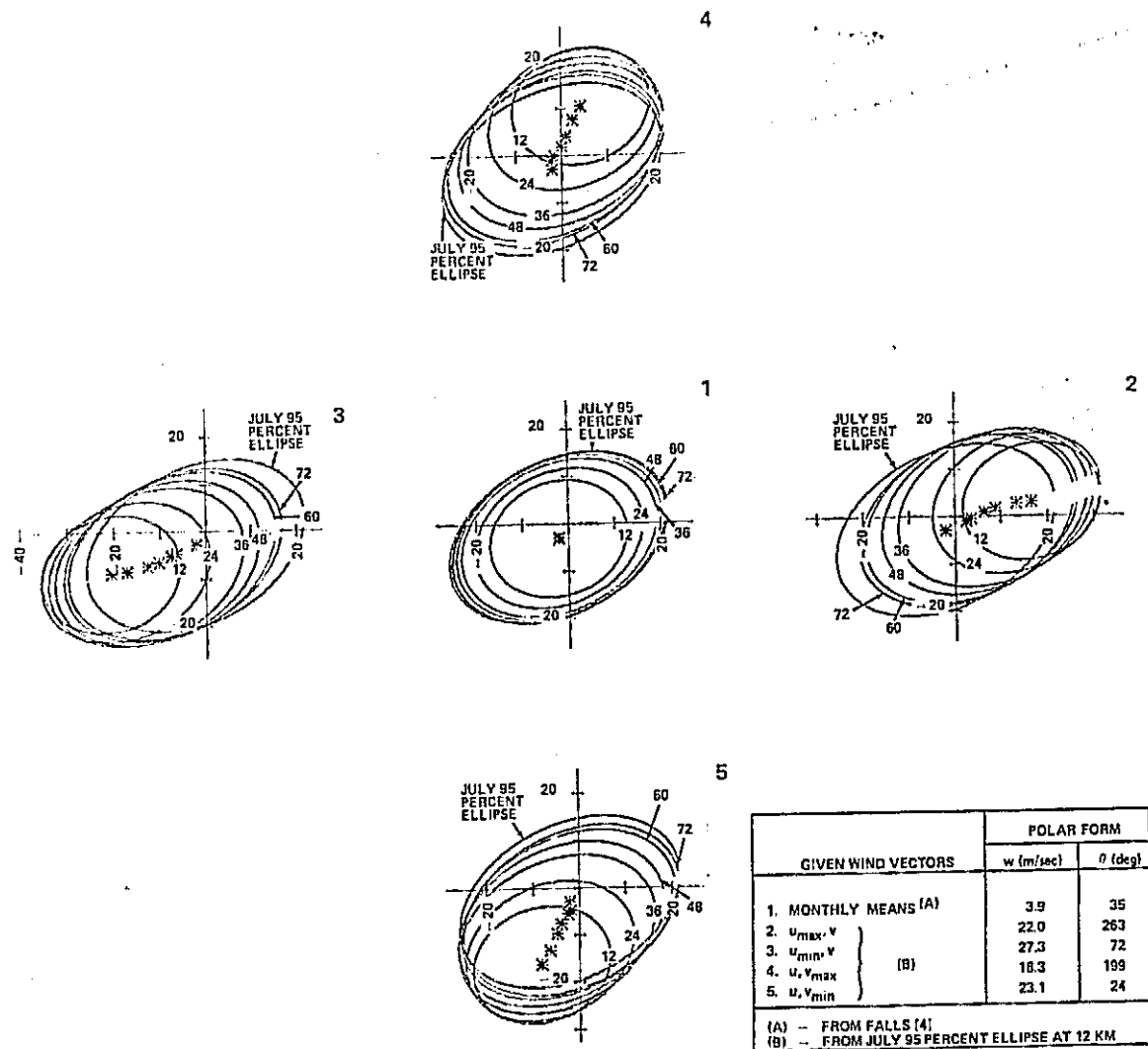
Figure 18. July conditional 95 percent wind ellipses at 12 km for time increments of 12, 24, 36, 48, 60 and 72 hours at Cape Kennedy (1956-70)
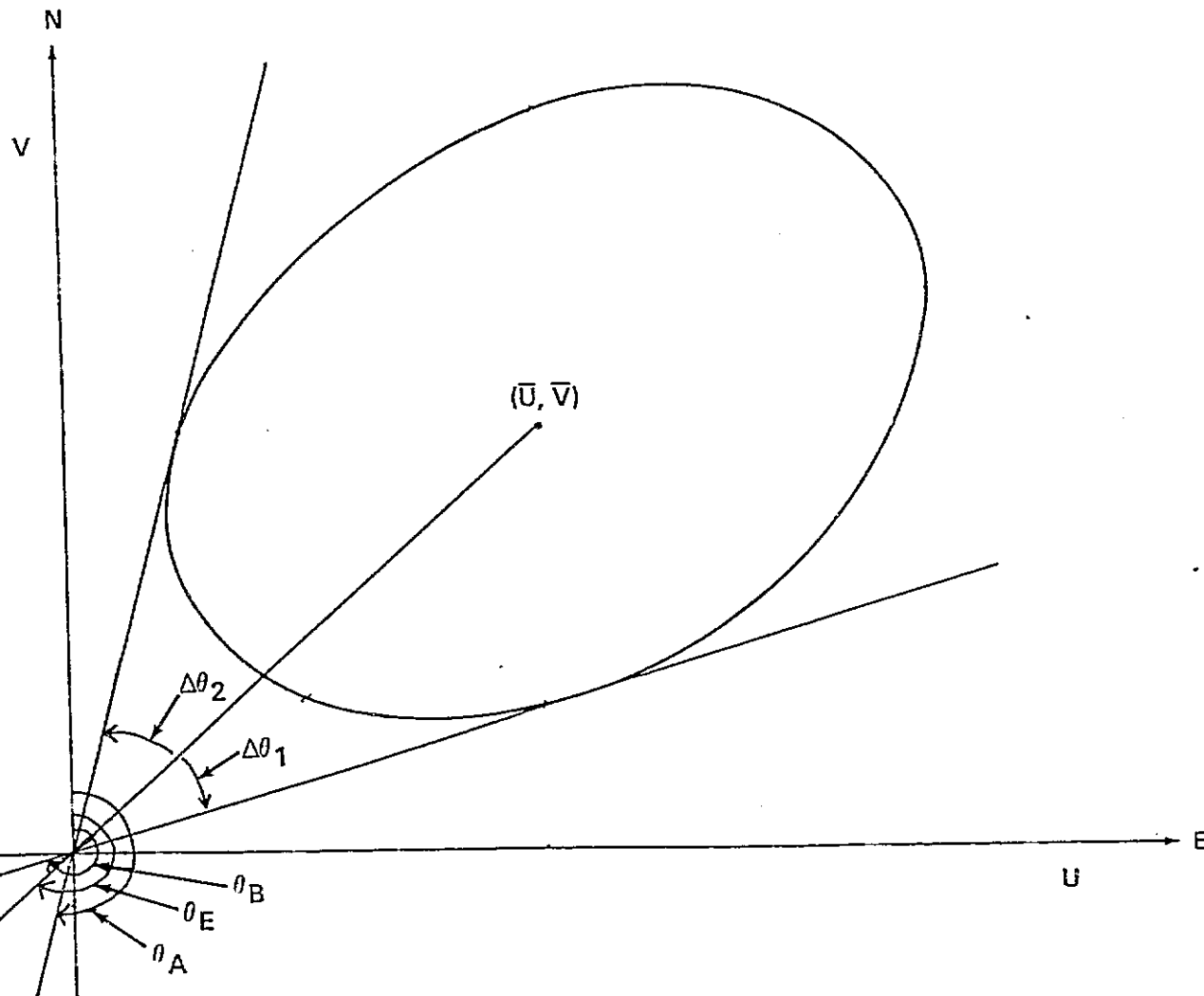
Figure 19. Wind Direction Characteristics of a Wind Probability Ellipse

Table 7. Wind Direction Characteristics of 95 Percent Conditional Wind Ellipses During April for an Elapsed Time (τ) of 12 Hours at Cape Kennedy (1956-70)

Characteristic	Altitude (KM) Condition (A)	1	6	12	18	24
θ_R (Deg)	1	*	212-351	239-322	*	*
	2	201-298	246-287	249-284	242-284	*
	3	8-148	*	*	*	42-125
	4	*	186-280	219-272	196-277	*
	5	*	276-358	286-355	283-27	*
θ_E (Deg)	1	*	277	278	*	*
	2	251	266	266	264	*
	3	79	*	*	*	84
	4	*	234	243	244	*
	5	*	316	323	326	*
$\Delta\theta_1$, $\Delta\theta_2$ (Deg, Deg)	1	*	-65,74	-39,44	*	*
	2	-50,47	-20,21	-17,20	-22,20	*
	3	-71,69	*	*	*	-42,41
	4	*	-48,46	-24,29	-48,33	*
	5	*	-49,42	-37,32	-43,61	*

(A)

Condition (2-5 from April 95 percent ellipse)			m/sec	m/sec
1 (B)	$\overline{u}$	$\overline{v}$	31.73	-4.66
2	u_{max}	v	74.35	4.43
3	u_{min}	v	-10.53	-13.89
4	u	v_{max}	43.30	29.39
5	u	v_{min}	20.52	-38.85

(B)   Monthly means from Falls [Ref. 4]; these vectors are expressed in polar form in the legend of Figure 17.

*   95 percent conditional ellipse covers all quadrants

F.   WIND CHANGES WITH RESPECT TO TIME INCREMENTS LESS
        THAN SIX-HOURS

The only data suitable for an analysis of wind changes
aloft at Cape Kennedy for small time increments (<6 hours)
are the sequential Jimsphere wind profiles obtained during
the period 1964 thru 1970 [5]. A measurement program which
began in December 1976 at Cape Kennedy will provide ten
soundings (six Jimsphere and four Rawinsonde) per day one day
a week for a 20 week period. These data will be analyzed in
Phase II of this study.

Wind changes have been calculated at 6 and 12 km over
Cape Kennedy from the January, April and July Jimsphere
sequential runs. The list of dates and number of soundings
for each sequential set is given in Table 8. Wind changes
have been calculated from these data in terms of component
change (Δu, Δv) and the modulus, R, of vector change (Eq. 6)
with respect to time; the calculated Δu, Δv and R as a function
of time increment τ (denoted by "Delta T") are illustrated in
Figures 20 and 21. The wind change data plotted in Figures
20 and 21 do not line up at exact time intervals because the
Jimsphere soundings comprising the sequential sets are not
equally spaced with respect to time. Therefore, calculation
of wind change statistics utilizing this data set requires the
use of grouped data. The means and standard deviations of
component differences for January, April and July at 6 and 12
km listed in Table 9 were calculated from data grouped by 1
hour intervals of τ centered at $\tau = 1,2...5$ hours. The statistics
do not indicate a strong systematic variation as a function of τ.
This is attributed to small sample size and non-uniformity of
sample size as a function of time increment. Ninety-five
percent confidence intervals for $\sigma_{\Delta u}$ and $\sigma_{\Delta v}$, calculated from
these sample estimates, and theoretical values calculated
from Equations 24 and 25 are compared in Figures 22 and 23;
it is illustrated that in most cases the theoretical values
are within the 95 percent confidence band.

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Table 8.   January, April and July
           Sequential Jimsphere Runs
           at Cape Kennedy

Month	Date	Number of Soundings
January	13-14, 1965	11
	27, 1965	4
	21-22, 1968	7
	20-21, 1969	4
	22-23, 1970	7
	TOTAL	33
April	13, 1965	9
	27, 1965	6
	4, 1966	4
	5- 6, 1966	12
	6, 1966	4
	7- 8, 1966	14
	16-17, 1967	10
	18, 1967	8
	4, 1968	6
	11, 1970	4
	TOTAL	77
July	2, 1965	6
	29-30, 1965	6
	4- 5, 1966	5
	12-13, 1967	11
	13-14, 1967	6
	24, 1967	4
	25-26, 1968	7
	16, 1969	3
	17, 1970	4
	TOTAL	52

43
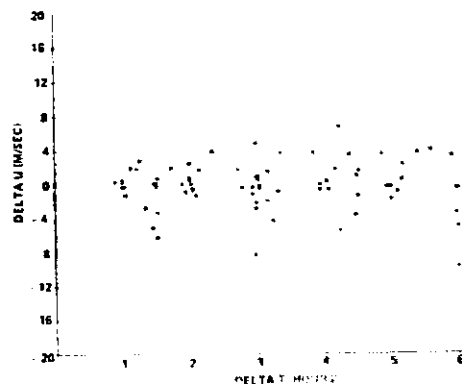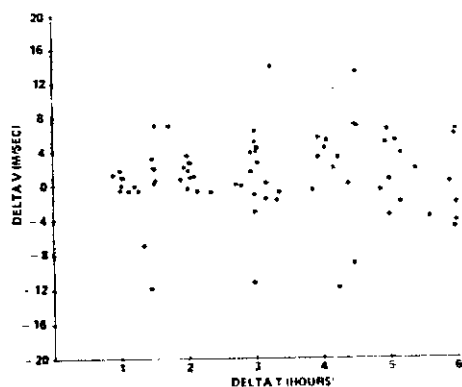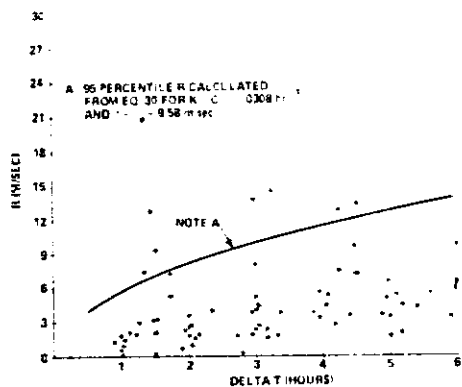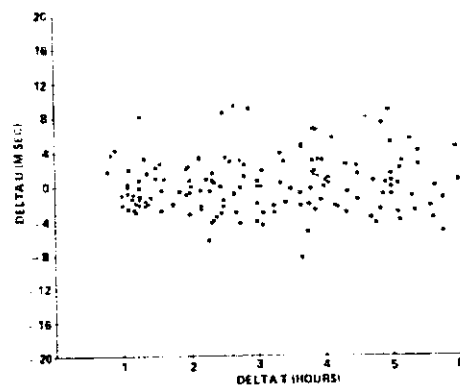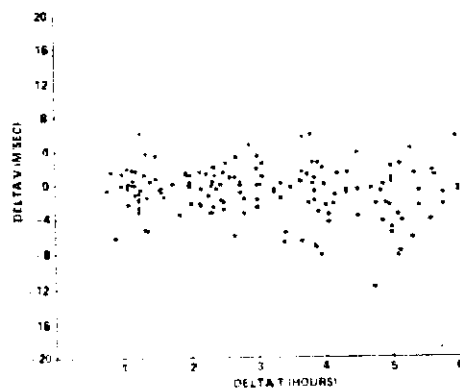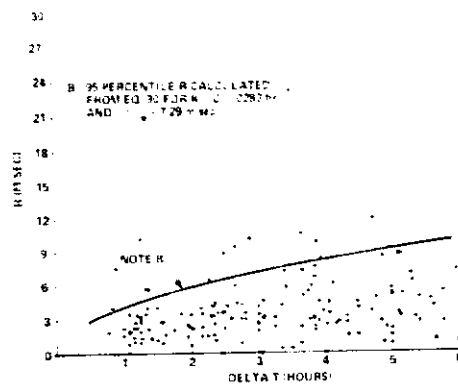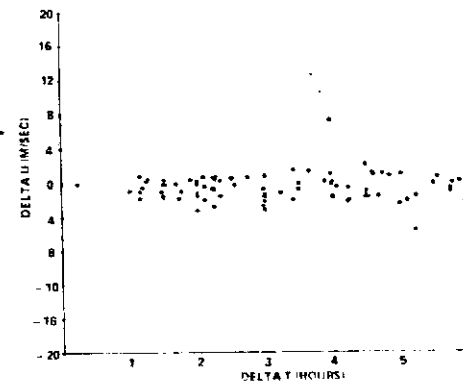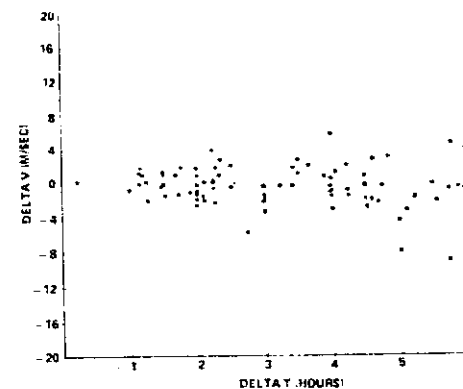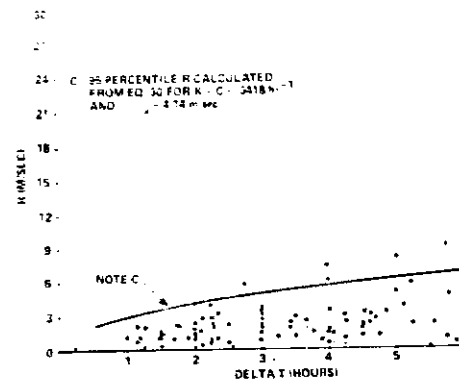
Figure 20. January, April and July Wind Component Change and Modulus of Vector Wind Change with Respect to Time at 6 km from Jimsphere Wind Profiles at Cape Kennedy

12 KM
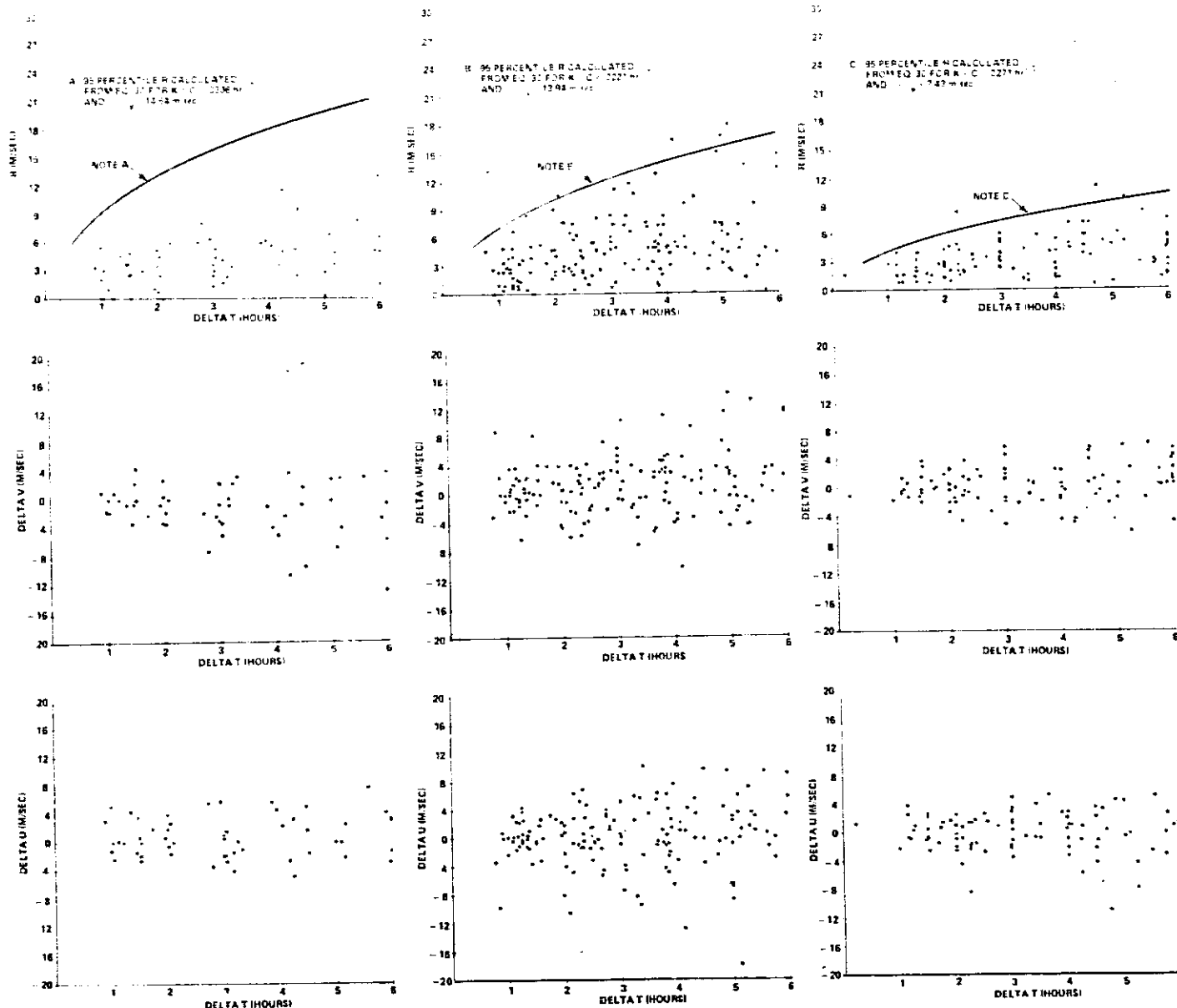
JANUARY APRIL JULY

Figure 21. January, April and July Wind Component Change and Modulus of Vector Wind Change with Respect to Time at 12 km from Jimsphere Wind Profiles at Cape Kennedy

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Table 9. January, April and July Bivariate Normal Statistics of Component Differences Calculated from Sequential Jimsphere Data at 6 and 12 km at Cape Kennedy

	τ Hours	$\overline{\Delta u}$ m/sec	$\sigma_{\Delta u}$ m/sec	$R(\Delta u, \Delta v)$	$\overline{\Delta v}$ m/sec	$\sigma_{\Delta v}$ m/sec	Sample Size	$\overline{\Delta u}$ m/sec	$\sigma_{\Delta u}$ m/sec	$R(\Delta u, \Delta v)$	$\overline{\Delta v}$ m/sec	$\sigma_{\Delta v}$ m/sec	Sample Size
				6 km						12 km			
January	1	-.09	2.04	.75	- .84	4.08	13	1.15	2.68	.28	- .76	1.36	10
	2	.02	2.25	-.44	1.91	2.27	17	.47	1.96	-.48	- .12	2.41	12
	3	-.40	2.91	.38	1.54	5.11	18	- .12	3.11	-.00	-1.10	3.16	13
	4	.68	3.54	.60	.29	6.03	10	2.01	4.12	.64	-2.87	4.44	7
	5	.78	1.80	-.26	3.76	4.70	12	.12	1.66	.04	-1.90	4.95	7
April	1	-.19	2.54	.28	- .50	2.58	29	- .01	2.76	-.32	.22	2.73	28
	2	-.59	2.32	.05	- .41	1.68	31	.25	3.80	.33	.36	3.40	31
	3	.60	3.79	.13	- .43	2.74	29	.10	4.55	.25	1.33	3.63	30
	4	.62	3.39	.21	- .75	3.49	31	.64	4.28	.24	1.19	4.53	31
	5	.76	3.44	.22	-2.33	3.67	26	.13	6.26	-.03	2.17	5.27	24
July	1	-.61	.87	-.32	.45	.93	7	.37	2.18	.09	- .28	1.07	7
	2	-.61	1.05	.19	.04	1.59	28	- .34	2.40	-.07	.22	2.06	28
	3	-.78	1.35	.15	-1.17	1.84	18	.96	2.51	-.20	.65	2.80	18
	4	-.13	2.26	-.12	.53	2.10	16	.61	2.77	.09	- .98	2.44	16
	5	-.65	2.03	.24	-1.60	2.77	14	-1.57	4.78	-.00	1.64	3.60	14

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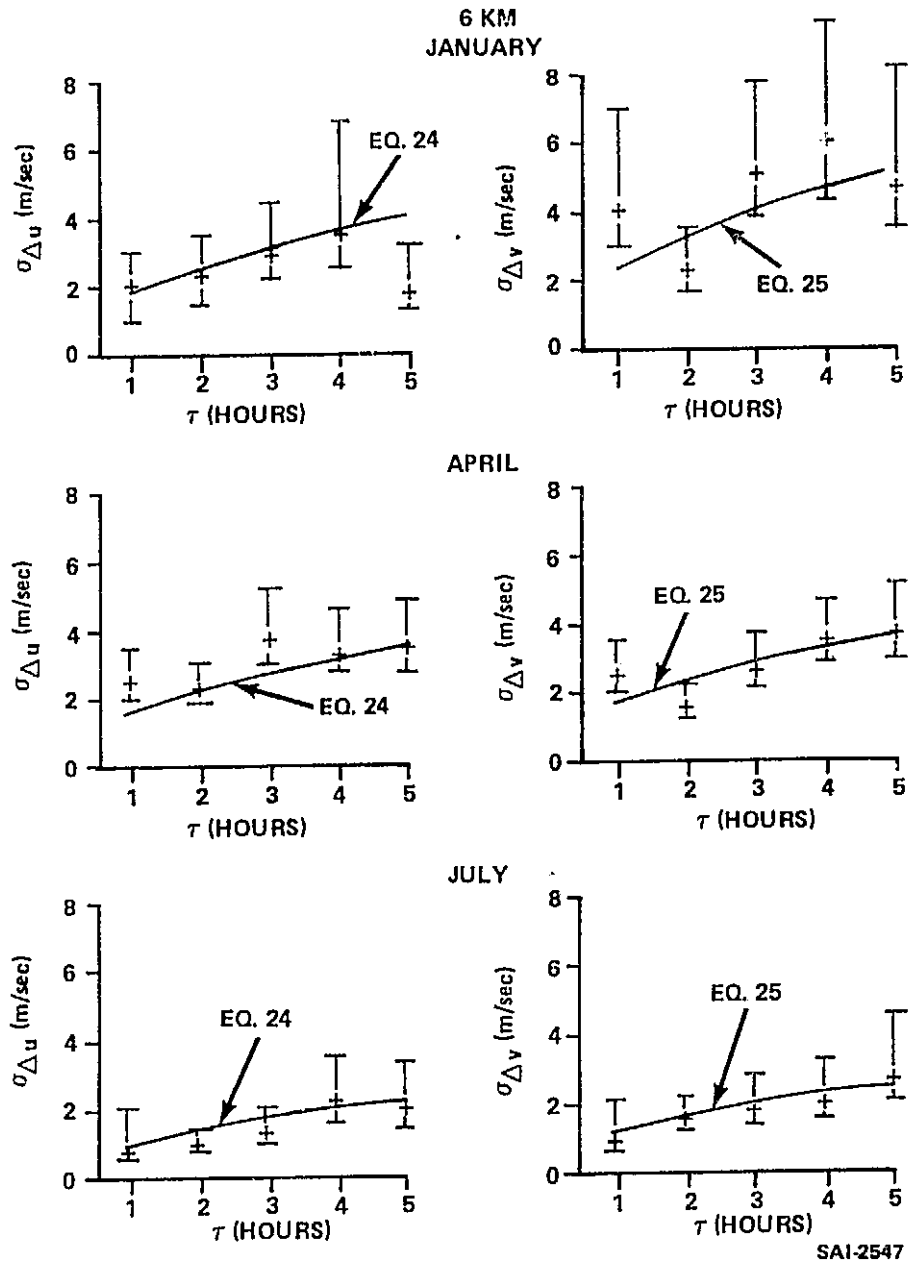
Figure 22. January, April and July 95 Percent Error Bounds of Sample Estimates of $\sigma_{\Delta u}$ and $\sigma_{\Delta v}$ at 6 km from Jimsphere Data and Theoretical Values Obtained from Equations 24 and 25

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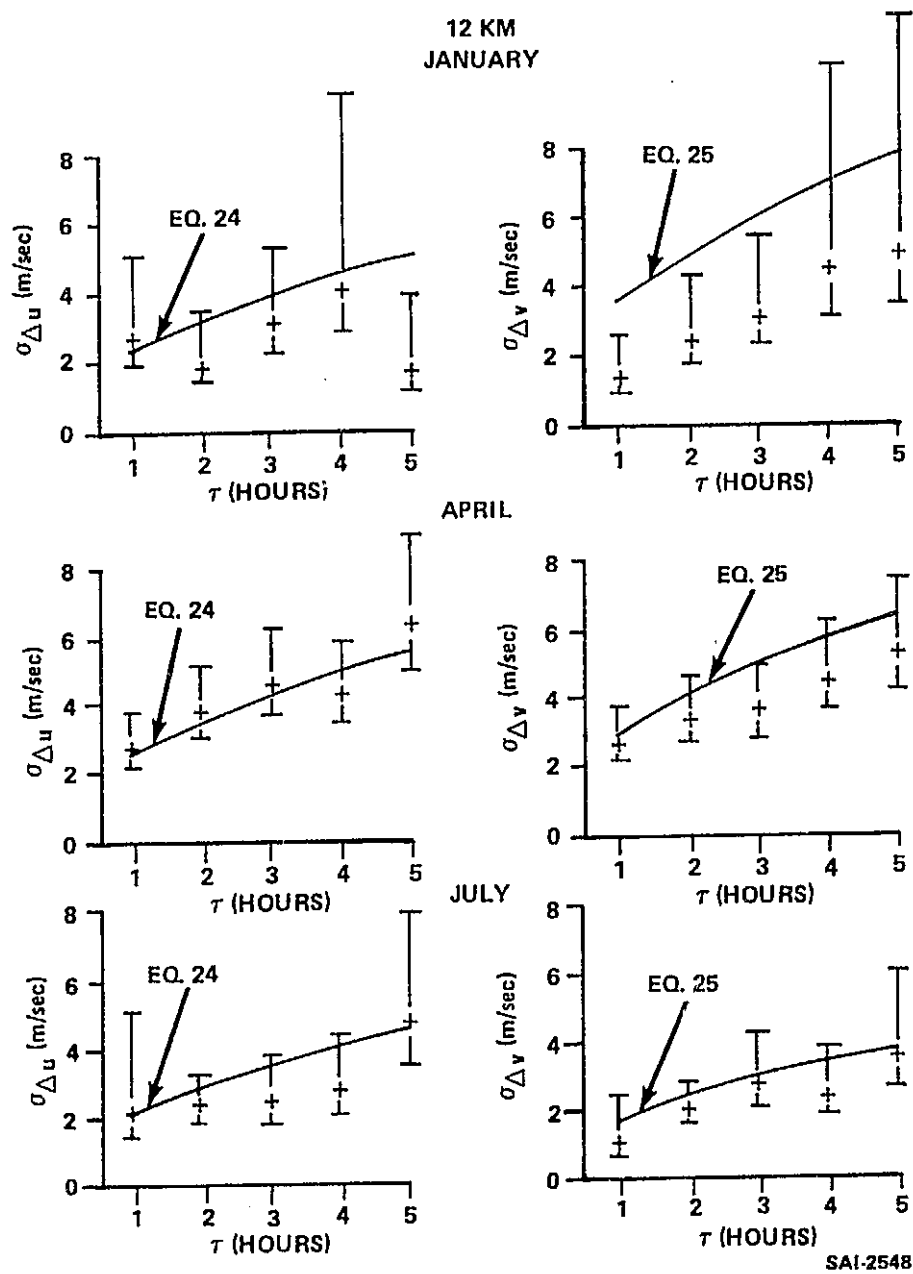
Figure 23. January, April and July 95 percent Error Bounds of Sample Estimates of $\sigma_{\Delta u}$ and $\sigma_{\Delta v}$ at 12 km from Jimsphere Data and Theoretical Values Obtained from Equations 24 and 25

G. VECTOR WIND SHEAR CHANGE WITH RESPECT TO TIME

Vector wind shear change with respect to time can be represented by a bivariate normal distribution; the five statistics of the distribution are the means, $\overline{\Delta u'}$ and $\overline{\Delta v'}$, the standard deviations, $\sigma_{\Delta u'}$ and $\sigma_{\Delta v}'$, and the correlation coefficient $R(\Delta u', \Delta v')$. Calculations of these statistics for 1 km shear at 12 km supplied by MSFC Space Sciences Laboratory, were reorganized for utilization in this study; the statistics for January, April and July are listed in Table 10. The 95 percent wind shear change ellipses derived from these bivariate normal statistics are illustrated in Figure 24. It is indicated that the 95 percentile shear change is largest in January and smallest in July; the 95 percentile wind shear change is approximately 25 percent larger in January in comparison with April. The rather close spacing of the ellipses during these months illustrates the fact that wind change is relatively independent of time increment for time increments from 12 to 72 hours; therefore, most of the 1 km wind shear change at 12 km over a 72 hour period occurs within the first twelve hours.

The January, April and July 95 percent 1 km wind shear ellipses at 12 km are also illustrated in Figure 24. It is indicated that the 95 percentile 1 km wind shear is smaller than the 95 percent 1 km wind shear change over time increments from 12 to 72 hours.

Table 10.   Bivariate Normal Statistics* of 1 km Vector
Wind Shear Change with Respect to Time at
12 km Over Cape Kennedy During January,
April and July

1956-67 (Period of Record)

		$\overline{\Delta u'}$ (m/sec)	$\sigma_{\Delta u}'$ (m/sec)	$R(\Delta u', \Delta v')$	$\overline{\Delta v'}$ (m/sec)	$\sigma_{\Delta v}'$ (m/sec)
	12	-.01	7.86	.1584	.02	7.55
	24	-.02	8.64	.2166	.06	7.84
January	36	-.06	9.15	.2391	.06	7.93
	48	-.03	9.04	.2364	.13	7.85
	60	-.13	8.76	.1260	.08	7.67

1956-70 (Period of Record)

	12	-.06	5.90	-.0509	-.07	5.62
	24	-.11	6.31	-.0140	-.10	6.01
April	36	-.13	6.49	.0459	-.14	5.85
	48	-.19	6.49	-.0019	-.15	6.15
	60	-.25	6.86	-.0194	-.18	6.27

1956-67 (Period of Record)

	12	-.03	3.89	-.0938	-.02	3.84
	24	-.08	4.09	-.0678	.00	3.82
July	36	-.12	4.22	-.0385	.01	4.06
	48	-.15	4.14	-.0405	.01	4.18
	60	-.14	4.33	-.0333	.01	4.05

*Calculated from twice daily Rawinsonde data
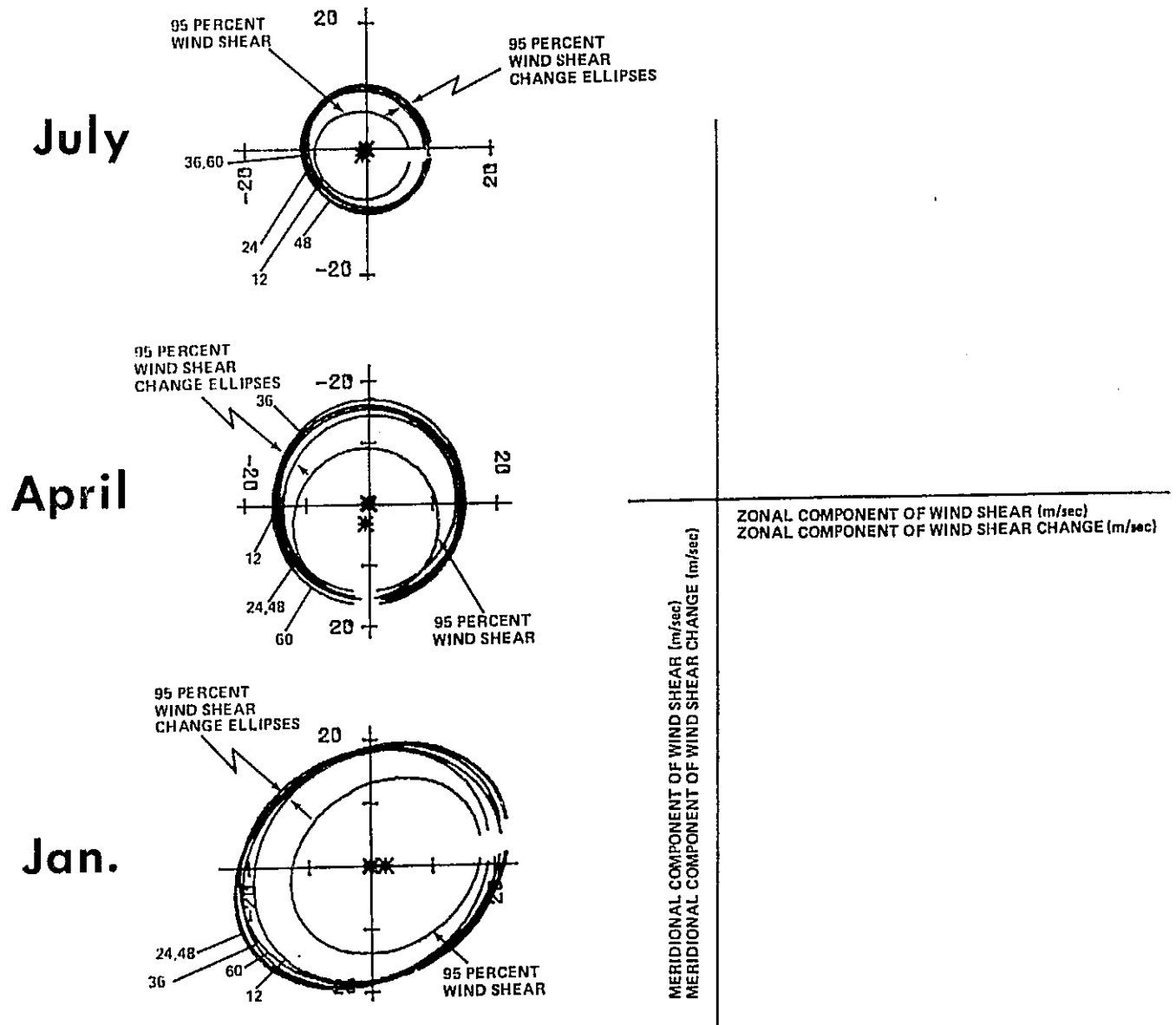
Figure 24. January, April and July 95 Percent Ellipses
for 1 km Wind Shear and 1 km Wind Shear Change
After 12, 24, 36, 48 and 60 Hours at 12 km
at Cape Kennedy (1956-70)

IV.   CONCLUSIONS, REMARKS AND RECOMMENDATIONS

The analysis presented in the preceding section for selected months and altitudes illustrates how various theoretical distribution functions can be used for calculation of wind change with respect to time at Cape Kennedy, Florida. The calculations can be made by utilization of the statistics given in the appendix for any reference month at 1 km altitude increments from 0 to 27 km.

The basic underlying assumption for the calculation of the distributions is that the joint distribution of the four variables represented by the components of the wind vector at any initial time and after a specified elapsed time is quadravariate normal. If the wind vector is specified at an initial time, then the conditional joint distribution of the wind components at a future time is bivariate normal. Since each of the variables of the quadravariate normal distribution is normal and the difference of two normal distributions is normal, it follows that wind component change is also normal and the joint distribution of zonal and meridional wind change is bivariate normal. The modulus of bivariate normally distributed variables has a Rayleigh distribution. Therefore, the modulus of vector wind change with respect to time is Rayleigh.

Sample distributions based on reference month Rawinsonde data obtained during 1956-70 agree reasonably well with the aforementioned theoretical distributions.

The standard deviation of wind component change with respect to time is the only statistic required for determination of the theoretical probability distribution (normal with zero mean) of wind component change. It has been shown that over a large range of altitudes that this statistic can be estimated from wind component standard deviation and the decay constant of the component theoretical autocorrelation function (Figures 2-4). The assumption of exponential decay of the autocorrelation function is reasonably accurate in most instances to time increments as large as 60 hours

during January, April and July. The exponential decay model is not supported by the autocorrelation data at high altitude during January and July (refer to appendix, computation set A, R(X,XP) and R(Y,YP)).

The observed modulus of vector wind change with respect to time is systemmatically larger than the predicted modulus (Section III.C.) for probabilities greater than .95. This may be attributable to inadequacy of the theory or inaccuracies of the data which affect the observed distribution at the extreme probabilities. If the theoretical distribution at extreme probabilities is to be used in engineering applications, it will be necessary to explain these systemmatic differences.

Wind change statistics calculated from Jimsphere data for small time intervals ($1 \leq \tau \leq 5$ hours) at Cape Kennedy reveal that extension of the theoretical calculation of wind component standard deviation described above to small time increments is valid at 6 and 12 km during January, April and July. A new sampling program at Cape Kennedy which began in December 1976 will provide six additional Jimsphere runs for each of 20 days during one day per week thru April 1977. These data will be used in Phase II of this study in the further analysis of wind change for small time intervals.

SAI is presently under contract (continuation of NAS8-32226) to extend this study of winds aloft temporal variability to include:

- Analysis of year to year variability
- Establishment of wind change statistics for Vandenberg AFB
- Development and application of a classification technique for identification of homogeneous winds aloft data sets
- Examination of relations between dynamic stability, wind shears and gusts at KSC.

The final report under the expanded study will be published in December 1977.

V. REFERENCES

1. Smith, O.E.: Vector Wind and Vector Wind Shear Models 0-27 km Altitude for Cape Kennedy, Florida, and Vandenberg AFB, California. NASA TMX-73319, July 1976.

2. Weil, H.: The Distribution of Radial Error. Ann. of Mathematical Statistics, Vol. 25, 1954, pp. 168-170.

3. Yadavalli, S. V.: On Applications of Some Results Related to Bivariate Gaussian Density Distribution Functions. Int. J. of Control, 1st Series, Vol. 5, No. 2, 1967, pp. 191-194.

4. Falls, L.W.: Normal Probabilities for Cape Kennedy Wind Components - Monthly Reference Periods for all Flight Azimuths - Altutudes 0 to 70 kilometers. NASA TMX-64771, April 16, 1973.

5. Johnson, D. and M. Alexander: Seventy Sequential Jimsphere Wind Profile Data Sets for ETR (Cape Kennedy) December 1964 thru July 1970. NASA ES-41, August, 1976.

This appendix contains two sets of reference month quadra-variate and conditional bivariate normal statistics of variables X, Y, XP and YP, at 1 km intervals from 0 to 27 km. The statistics were calculated from 15 years (1956-70) of twice daily KSC serially complete Rawinsonde data. The notation for the variable given in Section II of this report differs from the notation established for the computer output given herein; the notations are compared in Table I-1.

TABLE I-1. NOTATION OF VARIABLES

COMPUTATION SET

| Variable | A | | B | |
	Text (Sect.II)	Computer Output	Text (Sect.II)	Computer Output
X	u_0	u(at T)	u_0	u(at T)
Y	v_0	v(at T)	v_0	v(at T)
XP	u_1	u(at T+DT)	$u_1 - u_0$ $= \Delta u$	u(at T+DT) $-u($at T$)$
YP	v_1	v(at T+DT)	$v_1 - v_0$ $= \Delta v$	v(at T+DT) $-v($at T$)$

Table I-1 shows that the quadravariate statistics of computa-tion set "A" are for wind components at an initial time and after a specified time increment; the statistics for set "B" are for wind components at an initial time and wind component change after a specified time increment. The reference month quadravariate normal statistics at a particular altitude for six time increments (12, 24, 36, 48, 60 and 72 hours) are listed in the lower left of each page of computer listing; the six sets of conditional bivariate normal statistics cor-responding to the six time increments are listed in the lower right. The data were conditioned on monthly means given by Falls [4]. The derivation of the conditional bivariate

normal statistics for any other given vector involves re-calculation of the conditional means according to equations I-1 and I-2; the standard deviations and correlation co-efficients do not have to be recalculated because they are independent of the given wind vector.

$$\bar{x}_c \mid xp^* = \bar{x} + \frac{\left[(R(x,xp) - R(x,yp)\,R(xp,yp))\,(xp^* - \overline{xp})\,(\sigma_x/\sigma_{xp}) + (R(x,yp) - R(x,xp)\,R(xp,yp))\,(yp^* - \overline{yp})\,(\sigma_x/\sigma_{yp})\right]}{1 - [R(xp,yp)]^2} \tag{I-1}$$

$$\bar{y}_c \mid yp^* = \bar{y} + \frac{\left[(R(y,xp) - R(y,yp)\,R(xp,yp))\,(xp^* - \overline{xp})\,(\sigma_y/\sigma_{xp}) + (R(y,yp) - R(y,xp)\,R(xp,yp))\,(yp^* - \overline{yp})\,(\sigma_y/\sigma_{yp})\right]}{1 - [R(xp,yp)]^2} \tag{I-2}$$

where, $\bar{x}_c$ and $\bar{y}_c$ are the mean components of the conditional distribution,

xp^* and yp^* are the components of the given vector and

$\sigma_x, \sigma_y, \sigma_{xp}$ and σ_{yp} are equivalent to S.D.x, S.D.y, S.D. xp and S.D.yp respectively given in the computer listings.

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 0
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.66	2.90	-.2412	-.95	3.30	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.68	2.89	.5016	-.97	3.29	.4877	-.2343	.1026	-.3367
24	.69	2.89	.3277	-.97	3.30	.1979	-.2325	.1969	-.2958
36	.67	2.91	.1496	-.94	3.32	.0193	-.2383	.1933	-.1828
48	.67	2.91	.1461	-.92	3.32	-.0474	-.2359	.0941	-.0725
60	.67	2.91	.0563	-.91	3.30	-.0355	-.2413	.0545	.0234
72	.66	2.92	.0914	-.89	3.30	-.0025	-.2548	.0024	-.0028

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.74	-.90

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.67	2.42	-.2468	-.89	2.78
.66	2.66	-.2865	-.92	3.13
.66	2.83	-.2718	-.93	3.23
.67	2.87	-.2602	-.94	3.28
.67	2.89	-.2444	-.94	3.29
.67	2.89	-.2424	-.95	3.30

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 1
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2.73	7.02	.0092	.74	6.31	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
3.03	.91

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	2.74	7.01	.6772	.70	6.28	.5723	.0132	.3494	-.3261	2.85	4.60	-.0762	.95	4.70
24	2.70	7.03	.3455	.66	6.23	.2402	.0135	.3742	-.3485	2.74	6.10	-.0475	.91	5.66
36	2.69	7.08	.1205	.67	6.25	.0053	.0002	.2575	-.2474	2.70	6.74	-.0244	.82	6.09
48	2.68	7.12	.0593	.73	6.29	-.0729	-.0038	.1038	-.0943	2.73	6.98	-.0038	.76	6.26
60	2.72	7.15	.0637	.76	6.27	-.0468	-.0112	.0223	-.0147	2.74	7.00	.0071	.74	6.30
72	2.72	7.14	.0774	.81	6.29	.0086	-.0185	-.0200	-.0106	2.75	7.00	.0108	.74	6.30

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JANUARY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 2
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP — CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
7.03	7.06	.0462	1.10	6.40	930		7.37	1.23

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	7.05	7.06	.6979	1.04	6.38	.6266	.0444	.2904	-.2430	7.20	4.67	.0248	1.30	4.69
24	7.02	7.10	.4266	1.02	6.36	.3346	.0355	.3379	-.2869	7.11	6.02	-.0005	1.28	5.66
36	7.01	7.16	.2279	1.02	6.37	.1286	.0258	.2525	-.2118	7.06	6.70	.0167	1.21	6.14
48	7.03	7.18	.1592	1.05	6.39	.0251	.0236	.1253	-.1061	7.06	6.92	.0294	1.15	6.35
60	7.06	7.22	.1695	1.07	6.37	.0319	.0095	.0424	-.0659	7.07	6.94	.0419	1.12	6.39
72	7.09	7.26	.1583	1.12	6.37	.0696	.0025	.0028	-.0715	7.07	6.95	.0517	1.11	6.38

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	— CAPE KENNEDY	X	= U(AT T)
MONTH OF RECORD	— JANUARY	Y	= V(AT T)
PERIOD OF RECORD	— 1/56 — 12/70		
ALTITUDE (KM)	— 3	XP	= U(AT T + DT)
ALPHA ANGLE	— 90.0	YP	= V(AT T + DT)

• •

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
10.75	7.37	.0949	1.30	7.21	930		11.12	1.46

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	10.78	7.38	.7318	1.23	7.19	.6605	.0970	.2787	-.1391	10.96	4.78	.0542	1.53	5.18
24	10.77	7.43	.5075	1.21	7.16	.3887	.0955	.3125	-.1749	10.88	6.13	.0235	1.49	6.33
36	10.74	7.52	.3421	1.18	7.15	.2134	.0856	.2346	-.1435	10.83	6.80	.0548	1.44	6.86
48	10.75	7.58	.2963	1.18	7.17	.1147	.0820	.1076	-.0791	10.83	7.00	.0788	1.37	7.12
60	10.77	7.63	.2769	1.16	7.19	.1081	.0719	.0460	-.0440	10.83	7.06	.0933	1.35	7.16
72	10.80	7.68	.2688	1.18	7.19	.1192	.0604	.0316	-.0352	10.82	7.09	.0968	1.34	7.15

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QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 4
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
14.36	8.10	.1485	1.72	7.91	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
14.64	1.86

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	14.37	8.11	.7510	1.62	7.88	.6640	.1504	.3069	-.0718	14.53	5.13	.0767	1.93	5.68
24	14.35	8.14	.5730	1.61	7.87	.4041	.1530	.3010	-.1093	14.49	6.44	.0689	1.88	6.98
36	14.36	8.23	.4230	1.57	7.83	.2457	.1467	.2349	-.0902	14.44	7.23	.0969	1.84	7.50
48	14.38	8.31	.3596	1.57	7.81	.1627	.1384	.1674	-.0585	14.43	7.51	.1148	1.80	7.72
60	14.41	8.38	.3103	1.59	7.80	.1338	.1292	.1235	-.0225	14.42	7.68	.1259	1.78	7.79
72	14.43	8.45	.2817	1.59	7.85	.1379	.1150	.0921	.0075	14.41	7.77	.1328	1.77	7.81

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JANUARY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 5
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	18.02	9.08	.2007	2.15	8.72	930		18.31	2.26

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	18.03	9.09	.7629	2.05	8.70	.6693	.2011	.3217	.0014	18.21	5.70	.1131	2.34	6.26
24	17.99	9.11	.6027	2.03	8.66	.4076	.2019	.3112	-.0417	18.18	7.09	.1043	2.31	7.70
36	17.98	9.16	.4784	1.97	8.61	.2528	.1953	.2536	-.0437	18.14	7.87	.1323	2.28	8.24
48	18.00	9.25	.3968	1.94	8.59	.1617	.1827	.1882	-.0534	18.10	8.25	.1612	2.24	8.49
60	18.05	9.31	.3395	1.94	8.57	.1367	.1735	.1608	-.0259	18.08	8.51	.1694	2.22	8.56
72	18.08	9.42	.2940	1.94	8.64	.1228	.1572	.1158	.0047	18.07	8.67	.1814	2.21	8.61

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - JANUARY   Y = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 6   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	21.68	9.80	.2295	2.80	9.58	930		22.07	2.89

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	21.71	9.78	.7738	2.68	9.57	.6742	2274	.3255	.0551	•	21.94	6.09	.1215	3.00	6.87
24	21.66	9.78	.6276	2.64	9.49	.4182	.2646	.2970	.0156	•	21.91	7.52	.1319	2.98	8.47
36	21.65	9.84	.4922	2.58	9.42	.2706	.2200	.2506	-.0135	•	21.95	8.44	.1648	2.95	9.03
48	21.67	9.98	.4037	2.53	9.36	.1743	.2116	.2082	-.0073	•	21.81	8.91	.1793	2.92	9.29
60	21.73	10.00	.3579	2.52	9.30	.1557	.2069	.1740	.0368	•	21.78	9.14	.1886	2.89	9.36
72	21.80	10.11	.3023	2.53	9.32	.1512	.1983	.1320	.0468	•	21.75	9.34	.2042	2.87	9.42

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JANUARY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 7
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
25.23	10.93	.2790	3.42	10.67	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
25.72	3.50

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	25.28	10.92	.7978	3.28	10.63	.6768	.2767	.3495	.1300	25.57	6.51	.1340	3.63	7.64
24	25.24	10.93	.6530	3.20	10.54	.4011	.2720	.3203	.0725	25.53	8.19	.1582	3.63	9.49
36	25.23	10.96	.5185	3.12	10.43	.2720	.2707	.2855	.0558	25.46	9.30	.1866	3.61	9.99
48	25.28	11.12	.4389	3.06	10.37	.1877	.2633	.2457	.0633	25.40	9.80	.2066	3.57	10.25
60	25.35	11.21	.3801	3.06	10.28	.1656	.2528	.2408	.0678	25.36	10.10	.2137	3.54	10.29
72	25.44	11.30	.3174	3.07	10.26	.1350	.2535	.1967	.0535	25.31	10.36	.2366	3.50	10.42

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD    - JANUARY               Y  = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)      - 8                     XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                  YP = V(AT T + DT)
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| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP |

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
28.68	11.95	.3017	3.75	11.74	930	29.26	3.84

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	28.77	11.93	.7867	3.60	11.70	.6815	.3020	.3616	.1698	29.06	7.33	.1371	3.98	8.37
24	28.75	11.95	.6356	3.52	11.62	.4078	.2949	.3250	.1125	28.99	9.18	.1771	3.97	10.42
36	28.77	12.03	.5141	3.43	11.55	.2555	.2967	.2908	.0922	28.91	10.22	.2032	3.94	11.03
48	28.81	12.18	.4356	3.36	11.45	.1765	.2893	.2492	.0781	28.85	10.74	.2297	3.90	11.29
60	28.91	12.35	.3756	3.38	11.38	.1576	.2815	.2403	.0839	28.80	11.07	.2386	3.87	11.34
72	28.98	12.49	.3077	3.40	11.37	.1443	.2771	.2026	.0873	28.76	11.37	.2578	3.84	11.44

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – JANUARY   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 9   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
32.14	13.29	.3108	4.17	12.79	930	32.71	4.17

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	32.23	13.25	.8095	4.03	12.78	.6854	.3102	.3403	.2189	32.53	7.79	.1335	4.33	9.16
24	32.24	13.29	.6699	3.97	12.68	.4110	.3076	.3110	.1609	32.45	9.84	.1792	4.33	11.40
36	32.24	13.41	.5579	3.86	12.60	.2733	.3079	.2881	.1357	32.39	11.01	.2026	4.33	12.00
48	32.31	13.56	.4668	3.77	12.49	.2102	.2993	.2573	.1132	32.31	11.74	.2302	4.31	12.23
60	32.42	13.73	.4131	3.79	12.41	.1713	.2915	.2343	.1141	32.25	12.10	.2441	4.27	12.36
72	32.54	13.88	.3575	3.78	12.39	.1476	.2917	.1977	.1149	32.20	12.41	.2624	4.24	12.48

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 10
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	35.84	14.70	.3552	4.56	13.62	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	35.93	14.67	.8181	4.48	13.61	.7078	.3528	.3586	.2856
24	35.90	14.68	.6678	4.39	13.52	.4482	.3508	.3364	.2159
36	35.86	14.77	.5641	4.23	13.43	.3012	.3490	.2933	.1691
48	35.91	14.87	.4900	4.15	13.29	.2212	.3410	.2573	.1362
60	36.01	14.96	.4423	4.17	13.20	.1749	.3333	.2333	.1405
72	36.15	15.02	.3895	4.19	13.18	.1490	.3347	.2124	.1332

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	36.41	4.65

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
36.24	8.45	.1593	4.83	9.49
36.18	10.94	.2115	4.85	11.89
36.14	12.13	.2548	4.86	12.70
36.07	12.80	.2807	4.83	13.02
36.01	13.18	.2915	4.78	13.17
35.94	13.54	.3035	4.74	13.26

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 11
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
39.39	15.56	.3474	4.86	14.67	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
39.98	4.63

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	39.46	15.56	.8308	4.63	14.67	.7340	.3474	.3437	.2890	39.83	8.66	.1646	4.91	9.87
24	39.46	15.59	.6798	4.53	14.60	.4923	.3441	.3262	.2242	39.75	11.41	.2073	4.99	12.53
36	39.48	15.70	.5879	4.36	14.50	.3327	.3365	.2938	.1692	39.68	12.58	.2443	5.03	13.54
48	39.54	15.79	.5223	4.27	14.35	.2383	.3320	.2497	.1295	39.61	13.25	.2765	5.00	14.00
60	39.63	15.89	.4647	4.28	14.25	.1702	.3269	.2230	.1274	39.54	13.78	.2873	4.96	14.22
72	39.77	15.92	.4196	4.30	14.21	.1318	.3335	.1939	.1184	39.47	14.12	.3015	4.92	14.35

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – JANUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 12
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	41.80	14.97	.3410	5.08	14.64	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	42.39	4.71

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	41.87	14.99	.8314	4.89	14.60	.7691	.3436	.3387	.2991	42.23	8.32	.1406	4.99	9.29
24	41.89	15.07	.7009	4.78	14.52	.5257	.3392	.3313	.2398	42.15	10.68	.1810	5.13	12.23
36	41.91	15.21	.6090	4.63	14.44	.3530	.3302	.2914	.1860	42.09	11.87	.2308	5.19	13.43
48	42.03	15.40	.5465	4.54	14.40	.2433	.3243	.2518	.1492	41.99	12.53	.2614	5.18	13.95
60	42.13	15.51	.5042	4.50	14.32	.1499	.3173	.2372	.1453	41.93	12.93	.2663	5.15	14.18
72	42.26	15.53	.4595	4.51	14.29	.1045	.3202	.2154	.1395	41.86	13.30	.2796	5.11	14.29

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 13
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
42.03	13.53	.3206	4.86	12.79	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	42.14	13.55	.8128	4.74	12.74	.7836	.3200	.3371	.2759
24	42.18	13.61	.6687	4.65	12.62	.5575	.3176	.3206	.2075
36	42.19	13.75	.5638	4.55	12.55	.3790	.3166	.2819	.1520
48	42.29	13.98	.5096	4.50	12.48	.2683	.3194	.2591	.1342
60	42.43	14.15	.4788	4.51	12.41	.1946	.3215	.2297	.1256
72	42.57	14.31	.4484	4.53	12.41	.1549	.3270	.2204	.1140

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
42.63	4.59

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
42.42	7.88	.0968	4.79	7.86
42.33	10.06	.1791	4.90	10.44
42.28	11.17	.2266	4.95	11.64
42.20	11.64	.2391	4.94	12.10
42.12	11.87	.2532	4.91	12.34
42.06	12.09	.2590	4.88	12.43

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)   - CAPE KENNEDY              X  = U(AT T)
MONTH OF RECORD   - JANUARY                   Y  = V(AT T)
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     - 14                        XP = U(AT T + DT)
ALPHA ANGLE       - 90.0                      YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N				GIVEN X	GIVEN Y
	39.89	12.30	.3140	4.27	10.86	930				40.56	3.95

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (YP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	39.92	12.27	.7846	4.19	10.82	.8066	.3179	.3350	.2496	•	40.39	7.63	.1408	4.14	6.35
24	39.95	12.26	.6393	4.13	10.67	.6174	.3200	.3119	.1958	•	40.29	9.46	.2003	4.24	8.44
36	40.00	12.27	.5288	4.09	10.56	.4477	.3219	.2625	.1556	•	40.19	10.44	.2411	4.28	9.61
48	40.10	12.46	.4589	4.04	10.49	.3176	.3229	.2178	.1312	•	40.10	10.92	.2619	4.30	10.21
60	40.28	12.59	.4118	4.07	10.46	.2387	.3255	.1827	.1001	•	40.01	11.20	.2796	4.28	10.47
72	40.39	12.75	.3812	4.10	10.44	.1978	.3296	.1682	.0864	•	39.96	11.36	.2847	4.26	10.58

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   — JANUARY   Y = V(AT T)
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 15   XP = U(AT T + DT)
ALPHA ANGLE   — 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                      •   FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	35.69	10.67	.2985	4.04	9.81	930		36.28	3.79

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	35.75	10.64	.7547	4.00	9.76	.7687	.2981	.3339	.2270	36.09	7.00	.1089	3.94	6.18
24	35.79	10.64	.6052	3.94	9.66	.6025	.3011	.3326	.1765	35.99	8.49	.1611	4.03	7.67
36	35.83	10.68	.5094	3.88	9.57	.4484	.3002	.2704	.1313	35.93	9.18	.2232	4.07	8.66
48	35.89	10.77	.4206	3.83	9.48	.3236	.2929	.2012	.1007	35.85	9.68	.2566	4.07	9.22
60	36.00	10.86	.3631	3.82	9.48	.2281	.2925	.1500	.0596	35.80	9.93	.2808	4.06	9.51
72	36.11	10.96	.3425	3.82	9.47	.1822	.2946	.1501	.0455	35.75	10.01	.2785	4.05	9.59

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 16
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
30.67	9.25	.2726	3.56	8.47	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	30.70	9.22	.7000	3.51	8.43	.7564	.2690	.3367	.1646
24	30.73	9.19	.5935	3.44	8.34	.5962	.2724	.3454	.1246
36	30.77	9.22	.4856	3.41	8.25	.4434	.2714	.2932	.0833
48	30.84	9.30	.4066	3.38	8.20	.3160	.2699	.2468	.0515
60	30.96	9.36	.3250	3.37	8.19	.2017	.2686	.1846	.0455
72	31.07	9.41	.3064	3.33	8.18	.1618	.2680	.1614	.0305

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	31.11	3.44

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
30.96	6.60	.1182	3.56	5.42
30.90	7.43	.1399	3.62	6.61
30.84	8.07	.1948	3.63	7.44
30.77	8.43	.2207	3.62	7.91
30.71	8.74	.2394	3.59	8.22
30.67	8.79	.2468	3.58	8.30

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD — JANUARY
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM)   — 17
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
24.73	8.44	.2632	2.57	7.34	930	25.25	2.56

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	24.74	8.43	.6895	2.52	7.28	.7363	.2577	.3350	.1348	25.08	6.10	.1303	2.67	4.84
24	24.78	8.40	.5556	2.47	7.19	.5893	.2555	.3473	.0919	24.99	7.00	.1495	2.71	5.74
36	24.84	8.43	.4545	2.45	7.10	.4266	.2549	.3104	.0601	24.91	7.50	.1826	2.69	6.46
48	24.90	8.50	.3585	2.44	7.05	.2875	.2487	.2840	.0663	24.85	7.88	.1916	2.67	6.84
60	25.03	8.53	.3479	2.45	7.04	.1930	.2409	.2439	.0508	24.80	7.91	.2035	2.63	7.04
72	25.15	8.54	.2781	2.43	7.03	.1420	.2403	.2136	.0468	24.75	8.10	.2203	2.60	7.14

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD    - JANUARY               Y  = V(AT T)
PERIOD OF RECORD   - 1/50 - 12/70
ALTITUDE (KM)      - 18                    XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                  YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	18.31	7.79	.2965	1.02	5.82	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	18.75	1.89

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	18.32	7.77	.6405	1.79	5.80	.7083	.2939	.3183	.1554	18.58	5.98	.2146	1.93	4.06
24	18.35	7.78	.5526	1.76	5.75	.5852	.2955	.3520	.0782	18.53	6.46	.2181	1.95	4.67
36	18.44	7.79	.4264	1.76	5.67	.4007	.2975	.3315	.0276	18.44	7.00	.2355	1.92	5.18
48	18.50	7.81	.3440	1.74	5.63	.2660	.2993	.3008	.0300	18.39	7.29	.2365	1.90	5.45
60	18.62	7.85	.2628	1.77	5.62	.1441	.2878	.2577	.0054	18.34	7.50	.2526	1.96	5.61
72	18.73	7.93	.2262	1.75	5.64	.0871	.2836	.2120	.0178	18.31	7.58	.2629	1.83	5.69

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 19
ALPHA ANGLE   - 90.0

X = U(AT T)
Y· = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP · CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
12.73	7.35	.2669	1.07	4.55	930		13.02	1.25

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	12.74	7.35	.5798	1.06	4.57	.6592	.2619	.2676	.0771		12.87	5.96	.2631	1.21	3.39
24	12.79	7.32	.4645	1.06	4.53	.5400	.2588	.2620	.0084		12.81	6.45	.2762	1.19	3.79
36	12.84	7.30	.3922	1.04	4.50	.3721	.2521	.2782	-.0310		12.76	6.69	.2416	1.16	4.13
48	12.89	7.28	.3032	1.05	4.47	.2307	.2475	.2477	-.0094		12.74	6.97	.2291	1.12	4.34
60	12.96	7.31	.2692	1.04	4.47	.1440	.2476	.2322	-.0111		12.72	7.05	.2276	1.10	4.41
72	13.03	7.36	.2211	1.02	4.48	.0756	.2452	.2086	.0005		12.71	7.15	.2334	1.07	4.45

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 20
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | **CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP**

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
8.73	6.82	.2940	.55	3.84	930		8.70	.66

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	8.73	6.81	.6155	.55	3.84	.5382	.2922	.2642	.1258	8.69	5.36	.2416	.61	3.21
24	8.78	6.77	.5032	.56	3.81	.5057	.2821	.2460	.0883	8.68	5.88	.2650	.59	3.29
36	8.82	6.75	.4323	.56	3.78	.3549	.2771	.2532	.0457	8.66	6.13	.2507	.57	3.54
48	8.88	6.71	.3665	.56	3.78	.2869	.2721	.2379	.0405	8.65	6.33	.2524	.56	3.63
60	8.92	6.71	.3365	.54	3.78	.1639	.2669	.1965	.0288	8.64	6.41	.2571	.54	3.74
72	8.98	6.73	.3030	.53	3.79	.1254	.2630	.1799	.0518	8.63	6.50	.2590	.54	3.77

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – JANUARY   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 21   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
6.45	7.06	.2309	.23	3.61	930		6.25	.35

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	6.45	7.06	.5898	.26	3.61	.3903	.2304	.1935	.1443	6.34	5.70	.1539	.25	3.31
24	6.47	7.02	.5460	.24	3.61	.3646	.2221	.1793	.1166	6.33	5.91	.1736	.26	3.35
36	6.52	7.03	.4787	.25	3.64	.2403	.2281	.2396	.0295	6.30	6.17	.1584	.22	3.44
48	6.58	7.01	.4299	.25	3.67	.2199	.2249	.1828	.0650	6.30	6.37	.1816	.22	3.49
60	6.60	7.04	.4222	.28	3.66	.0865	.2193	.1632	.0362	6.29	6.39	.1851	.21	3.56
72	6.62	7.09	.3441	.25	3.67	.0728	.2196	.1311	.0127	6.31	6.61	.2034	.21	3.58

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — JANUARY
PERIOD OF RECORD   — 1/56 — 12/70
ALTITUDE (KM)   — 22
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
5.32	7.75	.2506	.29	3.72	930	4.97	.51

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.33	7.75	.6638	.32	3.71	.4061	.2493	.2245	.1436	5.07	5.79	.1622	.34	3.36
24	5.33	7.76	.5790	.31	3.71	.4402	.2483	.1840	.1583	5.12	6.32	.1891	.36	3.33
36	5.36	7.75	.5498	.32	3.72	.2050	.2439	.1650	.1732	5.13	6.47	.1887	.30	3.61
48	5.37	7.78	.5410	.31	3.73	.2684	.2429	.1527	.0967	5.09	6.51	.2190	.32	3.56
60	5.41	7.78	.4666	.31	3.76	.1230	.2389	.1293	.0746	5.10	6.85	.2222	.29	3.67
72	5.43	7.78	.4072	.30	3.77	.1704	.2386	.1154	.0445	5.10	7.07	.2362	.31	3.65

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 23
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP										CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N					GIVEN X	GIVEN Y			
4.93	8.30	.2469	.54	3.95	930					4.29	.85			

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	4.88	8.28	.7601	.57	3.94	.4717	.2393	.1938	.2246	4.51	5.38	.1411	.65	3.46
24	4.85	8.27	.7067	.59	3.92	.4602	.2367	.1769	.1938	4.55	5.87	.1760	.64	3.49
36	4.88	8.28	.6726	.63	3.91	.3273	.2338	.1774	.1339	4.52	6.14	.1938	.58	3.71
48	4.87	8.26	.6358	.63	3.90	.2934	.2201	.1387	.1332	4.55	6.41	.2183	.58	3.76
60	4.94	8.26	.5634	.65	3.90	.1194	.2173	.0876	.1101	4.55	6.86	.2429	.54	3.91
72	4.99	8.26	.5144	.65	3.90	.1407	.2114	.0678	.0866	4.55	7.12	.2534	.56	3.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — JANUARY
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM)   — 24
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.18	9.13	.2076	.64	3.88	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	5.12	9.12	.8095	.66	3.87	.4481	.2055	.1530	.1258
24	5.06	9.11	.7570	.67	3.88	.4445	.2036	.1242	.1450
36	5.08	9.10	.6982	.71	3.93	.2800	.1950	.1079	.1099
48	5.07	9.07	.6551	.74	3.96	.2910	.1867	.0752	.0779
60	5.12	9.06	.5991	.75	3.96	.1666	.1880	.0418	.0309
72	5.14	9.04	.5508	.76	3.96	.1886	.1768	.0510	.0598

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X   4.35
GIVEN Y   1.00

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
4.51	5.35	.1941	.77	3.46
4.63	5.96	.2010	.77	3.47
4.64	6.53	.2033	.70	3.72
4.67	6.88	.2372	.70	3.71
4.65	7.27	.2496	.67	3.82
4.70	7.55	.2295	.67	3.81

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD – JANUARY	Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70	
ALTITUDE (KM) – 25	XP = U(AT T + DT)
ALPHA ANGLE – 90.0	YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
6.23	9.64	.1660	.81	4.17	930	•	5.43	1.18

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	6.20	9.66	.8265	.81	4.16	.5213	.1674	.1397	.1256	•	5.58	5.43	.1191	.98	3.55
24	6.18	9.65	.8071	.82	4.16	.4876	.1687	.1087	.1297	•	5.62	5.69	.1580	.98	3.64
36	6.15	9.66	.7329	.81	4.16	.3564	.1695	.1107	.1169	•	5.70	6.56	.1378	.92	3.89
48	6.15	9.64	.7019	.79	4.15	.3397	.1810	.0513	.1021	•	5.69	6.86	.2069	.95	3.92
60	6.17	9.63	.6316	.78	4.16	.2039	.1839	.0210	.0877	•	5.73	7.47	.2092	.90	4.08
72	6.18	9.58	.5932	.76	4.16	.1979	.1819	-.0186	.0570	•	5.72	7.74	.2387	.92	4.08

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 26
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
7.60	11.16	.1782	1.04	4.60	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
6.87	1.43

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	7.53	11.19	.8496	1.04	4.61	.5275	.1742	.1144	.1533	7.05	5.89	.1748	1.24	3.91
24	7.46	11.23	.7876	1.00	4.60	.5021	.1741	.0682	.1470	7.15	6.88	.2244	1.26	3.98
36	7.42	11.18	.7249	1.01	4.63	.3286	.1667	.0436	.1407	7.22	7.68	.2154	1.18	4.34
48	7.40	11.13	.6981	1.02	4.62	.3660	.1702	.0235	.1072	7.22	7.99	.2496	1.20	4.28
60	7.40	11.12	.6437	1.02	4.62	.2044	.1729	-.0257	.0908	7.24	8.54	.2665	1.14	4.49
72	7.40	11.09	.5930	1.01	4.63	.2302	.1730	-.0521	.1028	7.29	8.99	.2680	1.16	4.45

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — JANUARY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 27
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8.20	12.53	.1350	1.56	5.28	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	8.14	12.54	.8735	1.55	5.29	.5918	.1282	.0802	.1110
24	8.06	12.60	.8142	1.48	5.18	.5117	.1239	.0275	.1126
36	8.06	12.53	.7628	1.48	5.18	.3943	.1186	-.0009	.0998
48	8.01	12.52	.7175	1.50	5.17	.3559	.1213	-.0436	.0638
60	7.97	12.54	.6654	1.47	5.18	.2412	.1286	-.0973	.0517
72	8.01	12.51	.6205	1.45	5.23	.1992	.1252	-.1173	.0583

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
7.40	2.08

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
7.56	6.10	.1669	1.86	4.25
7.69	7.27	.2139	1.88	4.53
7.72	8.10	.2215	1.81	4.87
7.73	8.72	.2699	1.79	4.91
7.77	9.35	.2907	1.75	5.08
7.79	9.82	.2790	1.73	5.12

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) - CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1	1/56 - 12/70	0	90.0	.66	2.90	-.2412	-.95	3.30	930
1	1/56 - 12/70	1	90.0	2.73	7.02	.0092	.74	6.31	930
1	1/56 - 12/70	2	90.0	7.03	7.06	.0462	1.10	6.40	930
1	1/56 - 12/70	3	90.0	10.75	7.37	.0949	1.30	7.21	930
1	1/56 - 12/70	4	90.0	14.36	8.10	.1485	1.72	7.91	930
1	1/56 - 12/70	5	90.0	18.02	9.08	.2037	2.15	8.72	930
1	1/56 - 12/70	6	90.0	21.68	9.80	.2295	2.80	9.59	930
1	1/56 - 12/70	7	90.0	25.23	10.93	.2790	3.42	10.67	930
1	1/56 - 12/70	8	90.0	28.68	11.95	.3017	3.75	11.74	930
1	1/56 - 12/70	9	90.0	32.14	13.29	.3108	4.17	12.79	930
1	1/56 - 12/70	10	90.0	35.84	14.70	.3552	4.66	13.62	930
1	1/56 - 12/70	11	90.0	39.39	15.56	.3474	4.86	14.67	930
1	1/56 - 12/70	12	90.0	41.80	14.97	.3410	5.08	14.64	930
1	1/56 - 12/70	13	90.0	42.03	13.53	.3206	4.86	12.79	930
1	1/56 - 12/70	14	90.0	39.89	12.30	.3140	4.27	10.86	930
1	1/56 - 12/70	15	90.0	35.69	10.67	.2935	4.04	9.81	930
1	1/56 - 12/70	16	90.0	30.67	9.25	.2726	3.56	8.47	930
1	1/56 - 12/70	17	90.0	24.73	8.44	.2632	2.57	7.34	930
1	1/56 - 12/70	18	90.0	18.31	7.79	.2965	1.82	5.82	930
1	1/56 - 12/70	19	90.0	12.73	7.35	.2669	1.07	4.55	930
1	1/56 - 12/70	20	90.0	8.73	6.82	.2940	.55	3.84	930
1	1/56 - 12/70	21	90.0	6.45	7.06	.2309	.23	3.61	930
1	1/56 - 12/70	22	90.0	5.32	7.75	.2506	.29	3.72	930
1	1/56 - 12/70	23	90.0	4.93	8.30	.2469	.54	3.95	930
1	1/56 - 12/70	24	90.0	5.18	9.13	.2076	.64	3.88	930
1	1/56 - 12/70	25	90.0	6.23	9.64	.1650	.81	4.17	930
1	1/56 - 12/70	26	90.0	7.60	11.16	.1782	1.04	4.60	930
1	1/56 - 12/70	27	90.0	8.20	12.53	.1350	1.56	5.28	930

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY $X = U(AT\ T)$
MONTH OF RECORD   – FEBRUARY $Y = V(AT\ T)$
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 0 $XP = U(AT\ T + DT)$
ALPHA ANGLE   – 90.0 $YP = V(AT\ T + DT)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						*	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	*	GIVEN X	GIVEN Y
.55	3.25	−.2792	−.30	3.60	848	*	.45	−.09

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	*	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.54	3.27	.4446	−.30	3.60	.4909	−.2807	.0937	−.4020	*	.46	2.76	−.2327	−.21	3.01
24	.55	3.29	.2933	−.32	3.58	.1802	−.2877	.1198	−.3418	*	.47	2.99	−.2863	−.27	3.48
36	.55	3.27	.1126	−.34	3.57	−.0149	−.2827	.0927	−.1897	*	.50	3.19	−.2949	−.31	3.58
48	.52	3.28	.1225	−.34	3.58	−.0354	−.2823	−.0072	−.1057	*	.52	3.22	−.2844	−.31	3.60
60	.51	3.27	.0643	−.32	3.61	−.0660	−.2755	.0227	−.0755	*	.53	3.24	−.2861	−.31	3.59
72	.52	3.28	.0688	−.31	3.60	−.0246	−.2704	−.0016	−.0581	*	.53	3.24	−.2812	−.31	3.60

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 1
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

- -

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.81	7.22	-.0335	1.72	6.61	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	3.84	7.27	.6614	1.75	6.61	.5535	-.0328	.3250	-.3702
24	3.89	7.26	.3299	1.73	6.63	.2090	-.0427	.2995	-.3891
36	3.86	7.19	.1132	1.73	6.63	.0320	-.0337	.1472	-.2812
48	3.86	7.18	.0709	1.74	6.64	.0175	-.0313	.0034	-.2058
60	3.88	7.15	.0281	1.76	6.61	.0119	-.0266	-.0162	-.1543
72	3.91	7.12	-.0190	1.77	6.61	-.0221	-.0227	-.0166	-.1085

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	3.65	2.35

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.46	4.79	-.1025	2.00	5.02
3.48	6.25	-.0610	1.79	6.14
3.60	6.88	-.0423	1.71	6.54
3.66	7.05	-.0309	1.73	6.61
3.71	7.13	-.0317	1.73	6.61
3.75	7.17	-.0365	1.71	6.61

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 2
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
8.15	7.73	-.0181	1.51	6.70	848		8.02	2.08

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	8.22	7.80	.7031	1.58	6.71	.5967	-.0154	.2623	-.2920		7.85	5.05	-.0681	1.76	5.06
24	8.29	7.77	.4614	1.55	6.71	.3046	-.0208	.2517	-.3244		7.83	6.41	-.0483	1.61	6.15
36	8.27	7.71	.2917	1.54	6.74	.1254	-.0133	.1526	-.2771		7.90	7.09	-.0310	1.54	6.57
48	8.27	7.71	.2131	1.56	5.75	.0698	-.0155	.0643	-.2216		7.96	7.37	-.0173	1.53	6.67
60	8.30	7.66	.1525	1.57	6.74	.0363	-.0068	.0395	-.1962		7.99	7.49	-.0176	1.52	6.69
72	8.30	7.61	.0901	1.55	6.69	-.0214	-.0065	.0132	-.1565		8.02	7.61	-.0230	1.49	6.70

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 3
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
12.05	8.26	.0079	1.75	7.36	848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
11.81	2.40

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	12.13	8.30	.7379	1.84	7.36	.6284	.0123	.1999	-.2677	11.65	5.08	.0725	2.05	5.54
24	12.19	8.28	.5394	1.82	7.37	.3484	.0050	.1922	-.3237	11.64	6.42	.0250	1.89	6.75
36	12.25	8.17	.4101	1.79	7.41	.2047	.0100	.1274	-.2876	11.67	7.14	.0178	1.82	7.14
48	12.28	8.13	.3465	1.79	7.40	.1426	.0122	.0783	-.2382	11.72	7.48	.0169	1.80	7.26
60	12.31	8.08	.2971	1.79	7.35	.0972	.0219	.0687	-.2083	11.75	7.68	.0087	1.78	7.30
72	12.31	8.06	.2287	1.77	7.31	.0295	.0272	.0407	-.1781	11.80	7.89	.0040	1.75	7.35

QUADF VARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – FEBRUARY   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 4   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N			GIVEN X	GIVEN Y		
	15.46	9.18	–.0035	2.26	8.05	848			14.92	2.95		

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	*	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	15.56	9.20	.7731	2.37	8.06	.6254	–.0005	.1689	–.2435	*	14.81	5.38	.0403	2.53	6.13
24	15.64	9.21	.5965	2.39	8.12	.3859	–.0122	.1576	–.3026	*	14.85	6.85	.0252	2.38	7.31
36	15.68	9.11	.4836	2.38	8.18	.2457	–.0119	.1235	–.2566	*	14.93	7.70	–.0015	2.32	7.74
48	15.73	9.02	.4223	2.35	8.20	.1755	–.0073	.1004	–.2256	*	14.97	8.07	–.0078	2.29	7.88
60	15.76	8.95	.3619	2.31	8.19	.1072	.0026	.1002	–.2073	*	15.00	8.34	–.0194	2.25	7.96
72	15.75	8.89	.2687	2.29	8.10	.0725	.0126	.0574	–.1668	*	15.11	8.71	–.0071	2.27	8.01

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 5
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
19.12	10.18	.0155	2.64	8.97	848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
18.45	3.43

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	19.26	10.20	.8110	2.73	8.98	.6308	.016·	.1743	-.1864	18.30	5.59	.0016	2.96	6.80
24	19.40	10.23	.6445	2.77	9.07	.3914	.0122	.1681	-.2440	18.32	7.35	.0081	2.76	8.12
36	19.46	10.17	.5256	2.80	9.14	.2668	.0157	.1481	-.2097	18.43	8.37	-.0059	2.67	8.55
48	19.53	10.07	.4533	2.80	9.14	.2040	.0238	.1311	-.1854	18.48	8.85	-.0053	2.64	8.71
60	19.55	9.98	.3818	2.75	9.14	.1488	.0330	.1137	-.1789	18.54	9.20	-.0001	2.62	8.81
72	19.55	9.88	.3047	2.75	9.05	.1336	.0468	.0932	-.1536	18.64	9.54	.0096	2.64	8.85

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — FEBRUARY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 6
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	23.14	11.15	.0938	3.18	9.51	848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
22.34	4.08

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	23.31	11.23	.8136	3.31	9.52	.6428	.0951	.2146	-.0849	22.20	6.22	.0503	3.54	7.14
24	23.46	11.26	.6497	3.32	9.60	.4022	.0915	.2022	-.1437	22.22	8.16	.0622	3.32	8.57
36	23.53	11.18	.5415	3.35	9.75	.2845	.0904	.1773	-.1327	22.33	9.15	.0604	3.22	9.01
48	23.62	11.04	.4690	3.36	9.77	.2201	.0922	.1535	-.1249	22.38	9.67	.0677	3.18	9.19
60	23.67	10.99	.3950	3.32	9.78	.1685	.0969	.1300	-.1272	22.45	10.07	.0774	3.17	9.32
72	23.69	10.89	.3303	3.27	9.74	.1516	.1056	.1082	-.1275	22.51	10.37	.0886	3.19	9.36

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 7
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	26.89	12.53	.1524	3.58	10.33	848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
25.96	4.49

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	27.08	12.59	.8240	3.71	10.31	.6394	.1517	.2368	-.0012	•	25.83	6.92	.0846	3.93	7.81
24	27.27	12.60	.6725	3.79	10.37	.3866	.1464	.2109	-.0049	•	25.84	9.04	.1067	3.66	9.39
36	27.38	12.53	.5651	3.83	10.53	.2557	.1427	.1757	-.0820	•	25.93	10.13	.1182	3.56	9.88
48	27.47	12.35	.4894	3.95	10.59	.1847	.1450	.1555	-.0702	•	26.00	10.78	.1190	3.52	10.07
60	27.50	12.21	.4226	3.83	10.61	.1286	.1523	.1483	-.0738	•	26.08	11.22	.1190	3.48	10.16
72	27.53	12.15	.3523	3.79	10.59	.1251	.1573	.1237	-.0821	•	26.17	11.60	.1356	3.51	10.19

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — FEBRUARY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 8
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N				GIVEN X	GIVEN Y
	30.63	14.01	.1902	3.79	11.35	848				29.58	4.67

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	30.80	14.04	.8395	3.90	11.34	.6715	.1854	.2567	.0491	29.48	7.46	.1122	4.15	8.27
24	31.01	14.05	.7007	3.93	11.40	.4125	.1783	.2473	.0050	29.48	9.85	.0396	3.86	10.14
36	31.11	13.92	.5893	3.96	11.56	.2526	.1680	.2084	-.0107	29.59	11.21	.1206	3.73	10.82
48	31.19	13.72	.5043	3.99	11.63	.1667	.1682	.1797	-.0199	29.68	12.01	.1369	3.67	11.06
60	31.21	13.52	.4338	3.96	11.65	.1224	.1721	.1648	-.0365	29.76	12.52	.1475	3.65	11.14
72	31.25	13.41	.3668	3.92	11.64	.1024	.1780	.1519	-.0370	29.86	12.95	.1563	3.65	11.19

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 9
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
34.59	15.74	.2343	4.11	12.35	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	34.74	15.75	.8490	4.23	12.36	.6883	.2262	.2675	.1203
24	34.95	15.71	.7298	4.22	12.45	.4247	.2139	.2480	.0708
36	35.07	15.55	.6317	4.28	12.63	.2707	.2069	.2192	.0535
48	35.18	15.38	.5451	4.31	12.69	.1801	.2069	.1966	.0331
60	35.25	15.18	.4741	4.28	12.71	.1425	.2103	.1744	.0184
72	35.30	15.04	.4114	4.22	12.71	.1180	.2092	.1657	.0101

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	33.44	4.88

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
33.39	8.24	.1455	4.43	8.85
33.38	10.67	.1432	4.17	11.01
33.46	12.14	.1559	4.03	11.71
33.53	13.13	.1713	3.96	11.98
33.60	13.79	.1872	3.96	12.09
33.69	14.29	.1936	3.94	12.14

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 10
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	38.27	16.92	.2549	4.15	13.76	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	38.43	16.87	.8604	4.27	13.79	.7061	.2476	.2624	.1860
24	38.66	16.82	.7358	4.27	13.87	.4438	.2383	.2391	.1363
36	38.84	16.69	.6340	4.40	13.94	.2932	.2276	.1971	.0954
48	39.00	16.51	.5602	4.45	14.00	.2031	.2280	.1719	.0785
60	39.13	16.35	.5013	4.47	14.03	.1673	.2302	.1547	.0682
72	39.25	16.31	.4475	4.43	14.02	.1541	.2279	.1493	.0680

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	36.89	4.76

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
36.91	8.61	.1329	4.37	9.67
36.92	11.44	.1586	4.15	12.19
36.96	13.05	.1953	4.02	13.03
37.01	13.99	.2082	3.97	13.36
37.06	14.62	.2175	3.96	13.47
37.14	15.12	.2194	3.95	13.50

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — FEBRUARY
PERIOD OF RECORD   — 1/56 — 12/70
ALTITUDE (KM)   — 11
ALPHA ANGLE   — 90.0

X   = U(AT T)
Y   = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	42.03	17.71	.2767	4.15	14.98	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	42.18	17.65	.8625	4.26	14.96	.7291	.2670	.2697	.2337
24	42.34	17.53	.7436	4.25	15.04	.4783	.2580	.2459	.1915
36	42.49	17.34	.6495	4.41	15.13	.3042	.2521	.2117	.1468
48	42.63	17.15	.5846	4.46	15.26	.2226	.2497	.1959	.1097
60	42.78	17.04	.5238	4.45	15.29	.1968	.2503	.1755	.0910
72	42.89	16.99	.4667	4.37	15.29	.1886	.2441	.1614	.0939

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	40.48	4.70

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
40.56	8.96	.1214	4.34	10.18
40.63	11.84	.1618	4.13	13.01
40.68	13.46	.2007	3.97	14.11
40.69	14.35	.2162	3.91	14.44
40.74	15.07	.2314	3.91	14.55
40.83	15.66	.2373	3.94	14.60

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 12
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
44.66	17.25	.2765	4.30	14.65	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	44.77	17.18	.8461	4.42	14.62	.7626	.2673	.2607	.2525
24	44.88	17.03	.7324	4.46	14.61	.5234	.2634	.2312	.2065
36	45.01	16.84	.6452	4.53	14.64	.3502	.2593	.2106	.1501
48	45.06	16.59	.5844	4.57	14.68	.2517	.2618	.1969	.1261
60	45.13	16.43	.5369	4.53	14.68	.2186	.2619	.1814	.1003
72	45.20	16.37	.4828	4.48	14.65	.2116	.2583	.1603	.0858

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
43.16	4.82

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
43.32	9.18	.1059	4.51	9.43
43.40	11.74	.1743	4.33	12.40
43.43	13.18	.2060	4.18	13.60
43.48	13.99	.2152	4.12	14.03
43.51	14.54	.2289	4.12	14.17
43.59	15.09	.2424	4.15	14.22

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — FEBRUARY
PERIOD OF RECORD   — 1/56 — 12/70
ALTITUDE (KM)   — 13
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP										CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N					GIVEN X		GIVEN Y		
	44.51	15.90	.3462	4.25	12.82	848					43.27		4.70		
DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	44.56	15.84	.8145	4.34	12.81	.7562	.3402	.3108	.3050		43.48	9.21	.1919	4.46	8.36
24	44.62	15.76	.7161	4.41	12.84	.5391	.3332	.2772	.2524		43.54	11.10	.2413	4.28	10.72
36	44.77	15.62	.6282	4.43	12.87	.3651	.3224	.2406	.1894		43.54	12.37	.2778	4.17	11.82
48	44.82	15.32	.5757	4.47	12.83	.2707	.3167	.2058	.1324		43.54	12.97	.3070	4.13	12.23
60	44.80	15.18	.5267	4.39	12.89	.2396	.3127	.2004	.1077		43.61	13.48	.3087	4.13	12.33
72	44.77	15.02	.4706	4.33	12.87	.2286	.3084	.1943	.0974		43.71	14.01	.3102	4.15	12.37

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 14
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
41.43	13.82	.3179	3.82	11.13	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	41.51	13.84	.7852	3.91	11.13	.7576	.3096	.2958	.2447
24	41.57	13.84	.6850	3.96	11.16	.5498	.3024	.2741	.1771
36	41.68	13.84	.5814	3.97	11.22	.3722	.2917	.2274	.1211
48	41.68	13.62	.5227	3.99	11.25	.2685	.2841	.1837	.0769
60	41.61	13.50	.4753	3.90	11.24	.2149	.2779	.1868	.0645
72	41.65	13.43	.4225	3.85	11.26	.1969	.2749	.1894	.0563

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	40.23	4.23

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
40.43	8.56	.2098	3.99	7.23
40.49	10.06	.2417	3.83	9.21
40.55	11.22	.2703	3.76	10.23
40.61	11.73	.2938	3.74	10.64
40.70	12.12	.2840	3.72	10.77
40.76	12.49	.2818	3.71	10.80

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 15
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
36.59	11.99	.2316	3.12	9.31	848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
35.54	3.51

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	36.61	12.04	.7690	3.21	9.31	.7506	.2271	.2555	.1449	35.75	7.66	.1361	3.27	6.10
24	36.73	12.04	.6743	3.27	9.37	.5455	.2229	.2386	.0836	35.75	8.82	.1725	3.13	7.73
36	36.85	12.02	.5911	3.31	9.42	.3838	.2191	.1805	.0493	35.77	9.62	.2089	3.09	8.55
48	36.86	11.90	.5357	3.37	9.47	.3067	.2133	.1362	.0173	35.83	10.06	.2347	3.08	8.84
60	36.86	11.80	.4794	3.34	9.46	.2530	.2077	.1449	-.0104	35.89	10.44	.2240	3.06	8.97
72	36.86	11.75	.4302	3.33	9.48	.2117	.2043	.1395	-.0387	35.95	10.71	.2254	3.05	9.06

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY              X  = U(AT T)
MONTH OF RECORD    - FEBRUARY                  Y  = V(AT T)
PERICD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)      - 16                        XP = U(AT T + DT)
ALPHA ANGLE        -  90.0                     YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | **CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP**

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	31.60	10.60	.1868	2.82	8.17	848		30.66	3.13

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	31.60	10.65	.7628	2.87	8.15	.7415	.1759	.2327	.0829	30.86	6.83	.1084	2.94	5.41
24	31.65	10.67	.6342	2.89	8.21	.5478	.1686	.2371	.0228	30.93	8.15	.1270	2.83	6.73
36	31.72	10.66	.5338	2.91	8.27	.3344	.1592	.1904	.0064	30.99	8.93	.1495	2.80	7.43
48	31.74	10.54	.4708	2.93	8.30	.2891	.1530	.1318	.0034	31.06	9.33	.1713	2.80	7.79
60	31.75	10.45	.4402	2.93	8.30	.2211	.1503	.1112	-.0085	31.08	9.49	.1764	2.79	7.94
72	31.71	10.45	.3898	2.98	8.33	.1896	.1511	.1151	-.0232	31.15	9.72	.1744	2.78	7.99

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869) – CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD – FEBRUARY	Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70	
ALTITUDE (KM) – 17	XP = U(AT T + DT)
ALPHA ANGLE – 90.0	YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
25.58	9.47	.1912	2.08	6.94	848	24.78	2.20

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	25.59	9.48	.7106	2.12	6.96	.7046	.1827	.2120	.0741	24.99	6.64	.1600	2.08	4.89
24	25.61	9.52	.5923	2.15	7.02	.5358	.1781	.2016	.0242	25.07	7.59	.1696	2.04	5.81
36	25.65	9.50	.5152	2.15	7.08	.3962	.1678	.1733	.0181	25.12	8.09	.1641	2.03	6.33
48	25.65	9.43	.4155	2.17	7.11	.3004	.1629	.1183	.0076	25.21	8.60	.1847	2.04	6.60
60	25.58	9.35	.3900	2.16	7.11	.2462	.1609	.1020	.0165	25.26	8.71	.1825	2.05	6.71
72	25.57	9.34	.3413	2.20	7.16	.2054	.1643	.1130	-.0004	25.30	8.89	.1787	2.03	6.77

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD – FEBRUARY	Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70	
ALTITUDE (KM) – 13	XP = U(AT T + DT)
ALPHA ANGLE – 90.0	YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP　　　|　CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	19.13	8.67	.3013	1.41	5.66	848		18.46	1.43

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	*	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	19.13	8.69	.6077	1.46	5.64	.6813	.2993	.3030	.1419	*	18.72	6.88	.2489	1.34	4.10
24	19.14	8.75	.5146	1.50	5.69	.5262	.2859	.2833	.0939	*	18.78	7.42	.2525	1.32	4.75
36	19.12	8.76	.4217	1.52	5.74	.3849	.2637	.2271	.0716	*	18.86	7.85	.2650	1.33	5.17
48	19.16	8.75	.3449	1.53	5.77	.2811	.2467	.2041	.0577	*	18.89	8.13	.2667	1.33	5.37
60	19.13	8.66	.2877	1.53	5.80	.2421	.2476	.1745	.0627	*	18.94	8.30	.2742	1.34	5.45
72	19.09	8.57	.2242	1.56	5.80	.2213	.2521	.1569	.0766	*	18.99	8.45	.2776	1.34	5.48

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 19
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
13.20	7.97	.2650	1.01	4.55	848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
12.40	1.10

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	*	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	13.15	8.01	.6196	1.06	4.54	.5984	.2604	.2595	.1345	*	12.73	6.25	.1919	.98	3.61
24	13.15	8.03	.5160	1.08	4.55	.4935	.2596	.2394	.1042	*	12.81	6.83	.2103	.97	3.92
36	13.11	8.04	.4567	1.10	4.56	.3485	.2512	.2053	.0776	*	12.87	7.09	.2216	.96	4.23
48	13.10	8.06	.3747	1.09	4.56	.2413	.2445	.1567	.0475	*	12.93	7.38	.2415	.97	4.39
60	13.07	8.01	.2752	1.11	4.57	.1882	.2387	.1433	.0073	*	13.01	7.65	.2508	.97	4.45
72	13.02	7.95	.2728	1.13	4.59	.1523	.2449	.1100	.0321	*	13.03	7.67	.2529	.98	4.49

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – FEBRUARY   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 20   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N			GIVEN X	GIVEN Y			
	8.19	7.58	.2690	.70	3.95	848			7.13	.76			

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	8.16	7.62	.5836	.73	3.94	.4630	.2661	.1972	.1644	7.60	6.16	.2091	.67	3.49
24	8.16	7.63	.4999	.72	3.93	.3908	.264?	.2030	.0856	7.66	6.56	.2331	.65	3.62
36	8.13	7.64	.4551	.70	3.97	.2478	.2621	.2113	.0655	7.72	6.74	.2164	.63	3.78
48	8.10	7.63	.4679	.69	3.96	.1842	.2650	.1678	.0589	7.71	6.68	.2331	.64	3.86
60	8.08	7.66	.3459	.68	3.95	.1190	.2619	.1409	.0704	7.86	7.11	.2400	.65	3.90
72	8.06	7.68	.3374	.68	3.94	.0918	.2614	.1470	.0533	7.87	7.13	.2384	.64	3.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 21
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.46	7.47	.2325	.20	4.41	848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	4.02	.01

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	*	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.43	7.46	.6325	.22	4.42	.4795	.2303	.1930	.1478	*	4.56	5.78	.1617	.04	3.85
24	5.40	7.47	.5542	.21	4.40	.4047	.2292	.1754	.1316	*	4.69	6.22	.1762	.05	4.01
36	5.34	7.49	.4711	.18	4.38	.1802	.2248	.1802	.0959	*	4.84	6.59	.1737	.07	4.29
48	5.26	7.53	.4433	.20	4.33	.1892	.2250	.1886	.0674	*	4.92	6.69	.1770	.06	4.28
60	5.26	7.52	.3952	.20	4.32	.1125	.2202	.1945	.0266	*	4.97	6.84	.1785	.06	4.31
72	5.18	7.58	.3868	.20	4.32	.1454	.2233	.2023	.0050	*	5.02	6.86	.1820	.06	4.29

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 22
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	4.26	7.90	.2223	-.12	4.06	848		2.46	-.45

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	4.24	7.91	.6619	-.11	4.08	.4325	.2215	.2123	.1399	3.09	5.92	.1262	-.37	3.63
24	4.20	7.88	.6249	-.13	4.09	.4227	.2203	.1951	.0756	3.19	6.15	.1787	-.34	3.66
36	4.14	7.87	.5427	-.14	4.08	.2157	.2215	.1816	.0773	3.35	6.63	.1624	-.30	3.93
48	4.12	7.84	.5242	-.12	4.09	.2790	.2190	.2001	.0482	3.40	6.71	.1661	-.32	3.86
60	4.08	7.84	.4356	-.11	4.07	.0984	.2158	.1362	.0602	3.56	7.11	.1625	-.28	3.99
72	4.04	7.88	.4099	-.11	4.06	.1888	.2104	.1445	.0409	3.62	7.20	.1919	-.26	3.97

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 23
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
3.74	8.06	.2440	.13	4.00	848		1.70	-.18

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	3.70	8.07	.6846	.09	4.03	.2983	.2519	.2399	.1688	2.37	5.88	.1178	-.11	3.75
24	3.62	8.05	.5291	.05	4.05	.5194	.2561	.2188	.1415	2.53	6.26	.1757	-.07	3.40
36	3.58	8.04	.5614	.00	4.04	.1894	.2618	.2122	.1111	2.68	6.66	.1626	-.06	3.87
48	3.50	8.05	.5509	-.02	4.05	.3332	.2707	.2090	.1219	2.74	6.72	.1757	-.03	3.74
60	3.44	8.04	.5124	-.03	4.06	.0849	.2721	.1621	.0931	2.84	6.91	.1928	-.00	3.94
72	3.35	8.05	.5108	-.04	4.08	.1874	.2794	.1505	.1136	2.90	6.93	.2046	.02	3.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 24
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS
FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
4.05	8.35	.2162	.26	3.81	848	1.82	−.02

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	4.01	8.31	.7227	.21	3.83	.3942	.2173	.1971	.1404	2.45	5.77	.1268	.06	3.47
24	4.01	8.23	.6736	.20	3.84	.4246	.2175	.1814	.1232	2.55	6.17	.1555	.08	3.43
36	3.96	8.21	.6239	.15	3.77	.1741	.2279	.1637	.1333	2.68	6.52	.1511	.10	3.72
48	3.99	8.17	.5958	.12	3.79	.2940	.2396	.1402	.1507	2.73	5.70	.1704	.15	3.63
60	3.97	8.14	.5753	.12	3.78	.0767	.2380	.1091	.1396	2.78	6.83	.1887	.15	3.78
72	3.95	8.17	.5294	.13	3.76	.1956	.2445	.1055	.1325	2.89	7.08	.1924	.17	3.73

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD — FEBRUARY	Y = V(AT T)
PERIOD OF RECORD — 1/56 – 12/70	
ALTITUDE (KM) — 25	XP = U(AT T + DT)
ALPHA ANGLE — 90.0	YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP / CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
4.36	9.14	.2920	.06	3.70	848	1.94	−.33

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	4.29	9.09	.7773	.05	3.70	.4110	.2926	.2303	.2358	2.52	5.75	.1930	−.20	3.34
24	4.24	9.04	.7229	.03	3.71	.4453	.2948	.2503	.2721	2.67	6.29	.1425	−.21	3.28
36	4.21	8.95	.6665	.02	3.70	.2347	.2926	.1927	.2296	2.80	6.79	.2187	−.14	3.56
48	4.21	8.92	.6256	.01	3.70	.2270	.2929	.2055	.2393	2.90	7.11	.2045	−.15	3.56
60	4.18	8.91	.6006	.02	3.70	.1014	.2865	.1524	.2204	2.97	7.29	.2508	−.09	3.65
72	4.18	8.91	.5711	.02	3.71	.1525	.2913	.1448	.2335	3.04	7.48	.2503	−.09	3.63

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD   – 1/55 – 12/70
ALTITUDE (KM)   – 26
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	5.02	9.73	.2482	.12	3.94	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	5.00	9.64	.8014	.09	3.91	.4198	.2522	.1689	.1750
24	4.95	9.53	.7614	.09	3.91	.3812	.2515	.1654	.1990
36	4.90	9.51	.7138	.03	3.86	.1859	.2586	.1630	.2341
48	4.86	9.55	.6727	-.00	3.85	.2212	.2605	.1798	.2519
60	4.83	9.57	.6242	-.00	3.85	.1046	.2551	.1369	.2445
72	4.77	9.58	.5826	.01	3.81	.1159	.2599	.1229	.2255

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	2.52	-.26

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.02	5.82	.2289	-.09	3.56
3.13	6.31	.2001	-.08	3.63
3.28	6.80	.1825	-.05	3.84
3.41	7.16	.1588	-.05	3.81
3.55	7.56	.2040	-.01	3.89
3.69	7.88	.2125	.00	3.89

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MCNTH OF RECORD   – FEBRUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 27
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
5.64	10.54	.1685	.23	3.98	848	3.06	-.10

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.61	10.40	.8060	.18	3.97	.4912	.1769	.1466	.1162	3.57	6.23	.1225	.04	3.46
24	5.57	10.23	.7559	.17	3.95	.4255	.1744	.1409	.1009	3.70	6.89	.1268	.05	3.59
36	5.48	10.21	.7292	.13	3.94	.2779	.1767	.1288	.1219	3.83	7.21	.1167	.09	3.81
48	5.50	10.17	.7079	.10	3.92	.2662	.1762	.1248	.1622	3.85	7.43	.1044	.10	3.82
60	5.50	10.09	.6495	.10	3.91	.1397	.1628	.1372	.1314	3.99	8.01	.1021	.09	3.92
72	5.44	10.08	.6208	.14	3.83	.1253	.1630	.1317	.1048	4.10	8.26	.1118	.10	3.92

BIVARIATE NORMAL STATISTICS OF X,Y

STATION (12868) – CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2	1/56 – 12/70	0	90.0	.55	3.26	-.2792	-.30	3.60	848
2	1/56 – 12/70	1	90.0	3.81	7.22	-.0335	1.72	6.61	848
2	1/56 12/70	2	90.0	8.15	7.73	-.0181	1.51	6.70	848
2	1/56 – 12/70	3	90.0	12.05	8.26	.0079	1.75	7.36	848
2	1/56 – 12/70	4	90.0	15.46	9.18	-.0035	2.26	8.05	848
2	1/56 – 12/70	5	90.0	19.12	10.18	.0155	2.64	8.97	848
2	1/56 – 12/70	6	90.0	23.14	11.15	.0938	3.18	9.51	848
2	1/56 – 12/70	7	90.0	26.89	12.53	.1524	3.58	10.33	848
2	1/56 – 12/70	8	90.0	30.63	14.01	.1902	3.79	11.35	848
2	1/56 – 12/70	9	90.0	34.59	15.74	.2343	4.11	12.35	848
2	1/56 – 12/70	10	90.0	38.27	16.92	.2549	4.15	13.76	848
2	1/56 – 12/70	11	90.0	42.03	17.71	.2767	4.15	14.98	848
2	1/56 – 12/70	12	90.0	44.66	17.25	.2765	4.30	14.65	848
2	1/56 – 12/70	13	90.0	44.51	15.90	.3462	4.25	12.82	848
2	1/56 – 12/70	14	90.0	41.43	13.82	.3179	3.82	11.13	848
2	1/56 – 12/70	15	90.0	36.59	11.99	.2316	3.12	9.31	848
2	1/56 – 12/70	16	90.0	31.60	10.60	.1868	2.82	8.17	848
2	1/56 – 12/70	17	90.0	25.58	9.47	.1912	2.08	6.94	848
2	1/56 – 12/70	18	90.0	19.13	8.67	.3013	1.41	5.66	848
2	1/56 – 12/70	19	90.0	13.20	7.97	.2650	1.01	4.55	848
2	1/56 – 12/70	20	90.0	8.19	7.58	.2690	.70	3.95	848
2	1/56 – 12/70	21	90.0	5.46	7.47	.2325	.20	4.41	848
2	1/56 – 12/70	22	90.0	4.26	7.90	.2223	-.12	4.06	848
2	1/56 – 12/70	23	90.0	3.74	8.06	.2440	.13	4.00	848
2	1/56 – 12/70	24	90.0	4.05	8.35	.2162	.26	3.81	848
2	1/56 – 12/70	25	90.0	4.36	9.14	.2920	.06	3.70	848
2	1/56 – 12/70	26	90.0	5.02	9.73	.2482	.12	3.94	848
2	1/56 – 12/70	27	90.0	5.64	10.54	.1685	.23	3.98	848

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 0
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.07	3.20	-.2107	.00	3.57	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.08	-.05

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.03	3.21	.4089	.01	3.57	.4483	-.2058	.1477	-.3296	.10	2.81	-.1967	-.01	3.07
24	-.00	3.23	.2967	.03	3.59	.2151	-.1991	.1673	-.3250	.10	2.93	-.2195	.00	3.40
36	-.01	3.25	.0732	.02	3.59	.0291	-.1962	.1692	-.1749	.08	3.15	-.2210	.02	3.51
48	-.02	3.25	.0594	.02	3.58	-.0031	-.1929	.1005	-.0834	.07	3.19	-.2174	.01	3.55
60	-.03	3.26	-.0188	.03	3.54	-.0395	-.1923	.0795	.0275	.06	3.20	-.2094	.02	3.55
72	-.06	3.26	.0236	.02	3.53	-.0261	-.2013	.0659	.0004	.07	3.20	-.2127	.02	3.56

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 1
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.18	7.05	.0096	1.64	6.24	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	3.14	7.04	.6416	1.61	6.25	.5486	.0100	.3423	-.3292
24	3.07	7.05	.3092	1.62	6.25	.2536	.0206	.3638	-.3431
36	3.06	7.10	.1195	1.61	6.23	.0482	.0252	.2308	-.2023
48	3.02	7.11	.0629	1.56	6.20	.0032	.0300	.1460	-.1127
60	2.97	7.14	.0361	1.53	6.20	-.0085	.0252	.0824	-.0425
72	2.87	7.13	.0346	1.49	6.19	.0057	.0207	.0644	-.0070

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
3.22	1.70

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.20	4.86	-.0512	1.71	4.77
3.20	6.23	-.0212	1.71	5.60
3.18	6.85	-.0098	1.68	6.06
3.18	6.99	.0003	1.67	6.17
3.18	7.04	.0062	1.66	6.22
3.19	7.04	.0074	1.66	6.23

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	— CAPE KENNEDY		X = U(AT T)
MONTH OF RECORD	— MARCH		Y = V(AT T)
PERIOD OF RECORD	— 1/56 — 12/70		
ALTITUDE (KM)	— 2		XP = U(AT T + DT)
ALPHA ANGLE	— 90.0		YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
7.28	7.30	.0412	1.31	6.13	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	7.18	7.29	.6853	1.26	6.13	.5392	.0438	.3150	-.2423
24	7.08	7.33	.4373	1.29	6.13	.2898	.0555	.3034	-.2849
36	7.03	7.42	.2537	1.26	6.12	.0876	.0660	.2325	-.1827
48	6.97	7.49	.1786	1.21	6.07	.0198	.0730	.1589	-.0805
60	6.89	7.55	.1481	1.17	6.08	.0168	.0672	.1135	-.0395
72	6.77	7.58	.1468	1.14	6.09	-.0056	.0670	.0897	-.0271

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X		GIVEN Y	
	7.28		1.41	

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
7.30	4.93	-.0586	1.41	4.85
7.33	6.16	-.0088	1.39	5.60
7.31	6.90	-.0036	1.37	5.95
7.31	7.15	.0141	1.35	6.06
7.32	7.21	.0254	1.35	6.09
7.34	7.21	.0281	1.34	6.11

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

```
STATION (12868)    - CAPE KENNEDY              X  = U(AT T)
MONTH OF RECORD    - MARCH                     Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 3                         XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                      YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP * CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
10.87	8.27	.0818	1.28	6.64	930		10.73	1.34

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	*	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	10.75	8.28	.7509	1.23	6.62	.5801	.0746	.2621	-.1934	*	10.82	5.05	.0535	1.34	5.21
24	10.66	8.32	.5461	1.24	6.62	.3335	.0859	.2392	-.2463	*	10.88	6.49	.0613	1.33	6.10
36	10.55	8.42	.3950	1.26	6.59	.1608	.0922	.1730	-.1809	*	10.92	7.38	.0520	1.32	6.46
48	10.46	8.50	.3218	1.23	6.57	.0778	.0964	.1159	-.0914	*	10.94	7.76	.0567	1.31	6.58
60	10.38	8.57	.2774	1.17	6.61	.0412	.0945	.0942	-.0303	*	10.95	7.93	.0603	1.31	6.60
72	10.28	8.59	.2385	1.13	6.63	.0243	.0944	.0908	-.0030	*	10.97	8.03	.0627	1.32	6.61

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 4
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
14.56	9.28	.0903	1.08	7.35	930		14.16	1.02

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	14.43	9.33	.7800	1.02	7.33	.5719	.0890	.2401	-.1178	14.35	5.54	.0137	1.04	5.87
24	14.31	9.36	.5950	.96	7.28	.3471	.1030	.2233	-.1644	14.45	7.16	.0442	1.08	6.76
36	14.21	9.44	.4769	.92	7.28	.1905	.1122	.1752	-.1250	14.51	7.99	.0451	1.09	7.13
48	14.08	9.51	.4202	.92	7.28	.0917	.1163	.1093	-.0750	14.58	8.35	.0594	1.09	7.29
60	13.97	9.60	.3667	.86	7.32	.0510	.1204	.0905	-.0276	14.62	8.61	.0650	1.10	7.32
72	13.87	9.65	.3231	.79	7.33	.0300	.1204	.0693	.0120	14.65	8.78	.0725	1.10	7.33

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 5
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	18.59	10.23	.1566	1.12	7.88	930		17.95	.95

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	18.43	10.29	.7903	1.06	7.86	.6162	.1576	.2884	-.0253	18.23	6.07	.0361	.98	6.02
24	18.29	10.30	.6374	1.00	7.81	.3894	.1666	.2641	-.0707	18.37	7.67	.0759	1.05	7.08
36	18.19	10.35	.5205	.95	7.73	.2389	.1656	.2023	-.0684	18.46	8.59	.1045	1.09	7.54
48	18.05	10.41	.4644	.94	7.77	.1247	.1670	.1441	-.0406	18.54	8.98	.1179	1.11	7.76
60	17.93	10.50	.3992	.86	7.81	.0795	.1722	.1018	-.0118	18.59	9.35	.1336	1.13	7.83
72	17.81	10.58	.3613	.78	7.81	.0662	.1749	.0658	.0077	18.63	9.52	.1466	1.13	7.85

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

```
STATION (12868)    - CAPE KENNEDY            X  = U(AT T)
MONTH OF RECORD    - MARCH                   Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 6                       XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                    YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
22.67	11.10	.1958	1.45	8.66	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
21.77	1.30

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	*	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	22.46	11.11	.8048	1.36	8.61	.6626	.1994	.2975	.0406	*	22.11	6.44	.0748	1.32	6.32
24	22.32	11.14	.6579	1.30	8.57	.4282	.2037	.2665	-.0308	*	22.29	8.14	.1305	1.37	7.66
36	22.18	11.25	.5470	1.25	8.42	.2273	.2008	.2136	-.0443	*	22.43	9.12	.1377	1.40	8.30
48	22.02	11.32	.4796	1.23	8.45	.1360	.2032	.1549	-.0214	*	22.53	9.64	.1576	1.43	8.50
60	21.87	11.41	.4185	1.15	8.48	.0838	.2094	.1177	.0076	*	22.61	10.04	.1690	1.45	8.58
72	21.70	11.47	.3831	1.09	8.50	.0686	.2109	.0731	.0146	*	22.68	10.22	.1869	1.46	8.62

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 7
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
26.54	12.07	.2262	1.75	9.64	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	26.29	12.11	.8178	1.63	9.62	.7101	.2282	.3068	.0912
24	26.14	12.12	.6666	1.60	9.60	.4554	.2323	.2955	.0339
36	26.01	12.22	.5569	1.56	9.47	.2544	.2349	.2453	.0255
48	25.84	12.32	.4858	1.53	9.50	.1568	.2363	.1724	.0416
60	25.70	12.46	.4268	1.44	9.52	.1028	.2412	.1150	.0321
72	25.50	12.54	.3902	1.34	9.51	.0884	.2405	.0793	.0287

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
25.51	1.53

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
25.90	6.85	.1019	1.57	6.63
26.12	8.87	.1233	1.62	8.37
26.26	9.94	.1429	1.67	9.14
26.38	10.51	.1779	1.72	9.42
26.46	10.88	.2048	1.75	9.54
26.53	11.08	.2192	1.77	9.58

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — MARCH
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 8
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	30.26	13.06	.2149	1.88	10.45	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	30.03	13.12	.8227	1.79	10.44	.7364	.2227	.2934	.0933
24	29.85	13.14	.6779	1.76	10.42	.5051	.2294	.2817	.0382
36	29.69	13.26	.5712	1.71	10.31	.3152	.2348	.2289	.0421
48	29.51	13.37	.5050	1.66	10.33	.1802	.2373	.1705	.0538
60	29.35	13.50	.4402	1.58	10.37	.1114	.2439	.1046	.0433
72	29.16	13.59	.3982	1.47	10.36	.0804	.2449	.0718	.0282

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	29.07	1.64

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
29.47	7.33	.0997	1.67	6.93
29.73	9.47	.1280	1.72	8.64
29.91	10.65	.1437	1.78	9.77
30.04	11.24	.1652	1.83	10.18
30.13	11.70	.1970	1.87	10.35
30.21	11.94	.2098	1.89	10.40

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 9
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
34.12	14.26	.1757	1.76	12.13	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
32.93	1.53

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	33.91	14.37	.8154	1.67	12.11	.7370	.1873	.2495	.0974	33.32	8.22	.0310	1.57	8.08
24	33.73	14.43	.6641	1.61	12.07	.4932	.1948	.2597	.0416	33.59	10.59	.0689	1.62	10.36
36	33.56	14.56	.5545	1.54	11.94	.3077	.1983	.2410	.0350	33.77	11.82	.0806	1.66	11.33
48	33.36	14.65	.4722	1.51	11.97	.1768	.2001	.1886	.0274	33.91	12.54	.1129	1.71	11.79
60	33.16	14.79	.4070	1.40	11.99	.1004	.2063	.1081	.0166	34.01	12.99	.1521	1.76	12.02
72	32.95	14.89	.3617	1.31	11.99	.0562	.2134	.0815	.0158	34.09	13.27	.1606	1.77	12.08

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — MARCH
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 10
ALPHA ANGLE   — 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
38.06	15.53	.1485	1.75	13.59	930		36.77	1.45

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	37.88	15.72	.8105	1.68	13.54	.7352	.1591	.2051	.1059	37.17	9.09	-.0027	1.50	9.13
24	37.73	15.82	.6552	1.60	13.55	.4871	.1667	.2345	.0619	37.44	11.71	.0257	1.55	11.68
36	37.56	15.95	.5380	1.49	13.55	.2856	.1737	.2194	.0366	37.64	13.06	.0568	1.62	12.82
48	37.32	16.11	.4528	1.42	13.57	.1495	.1760	.1856	.0363	37.82	13.83	.0802	1.68	13.26
60	37.08	16.30	.3947	1.28	13.56	.0604	.1800	.1387	.0246	37.93	14.25	.1052	1.73	13.45
72	36.81	16.40	.3411	1.18	13.56	.0323	.1890	.0973	.0294	38.04	14.59	.1239	1.75	13.53

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 1.1
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
41.75	15.95	.1332	1.47	15.24	930	40.36	1.13

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	41.57	16.14	.8276	1.40	15.21	.7433	.1428	.1723	.1134	40.76	8.96	-.0158	1.19	10.14
24	41.46	16.33	.6743	1.32	15.25	.4911	.1513	.2184	.0913	41.02	11.78	-.0142	1.22	13.09
36	41.30	16.54	.5562	1.20	15.25	.2807	.1609	.2188	.0809	41.25	13.26	.0174	1.29	14.38
48	41.09	16.69	.4668	1.13	15.23	.1274	.1673	.1805	.0764	41.42	14.11	.0568	1.36	14.91
60	40.84	16.88	.4122	1.02	15.20	.0430	.1737	.1238	.0690	41.56	14.54	.0910	1.42	15.12
72	40.55	17.04	.3753	.94	15.20	.0157	.1841	.0746	.0602	41.68	14.79	.1139	1.45	15.20

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858)   – CAPE KENNEDY
MONTH OF RECORD   – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 12
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	44.58	15.38	.1701	1.53	14.81	930

GIVEN X: 43.35   GIVEN Y: 1.25

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	44.47	15.56	.8324	1.46	14.80	.7796	.1784	.1578	.1687	43.66	8.52	.0667	1.35	9.27
24	44.41	15.78	.6828	1.38	14.88	.5409	.1834	.1723	.1434	43.87	11.24	.0700	1.39	12.41
36	44.24	15.96	.5671	1.31	14.96	.3400	.1902	.1670	.1281	44.09	12.67	.0895	1.42	13.84
48	44.11	16.14	.4917	1.26	15.04	.1776	.1948	.1491	.1123	44.23	13.39	.1108	1.45	14.47
60	43.92	16.36	.4433	1.17	15.04	.0785	.2034	.1164	.1013	44.34	13.79	.1326	1.46	14.69
72	43.69	16.54	.3909	1.08	15.07	.0416	.2144	.0825	.0801	44.45	14.16	.1504	1.51	14.76

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY              X  = U(AT T)
MONTH OF RECORD    - MARCH                     Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 13                        XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                      YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	44.61	13.79	.1882	1.66	13.10	930	•	43.54	1.38

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	44.55	13.95	.8215	1.58	13.07	.7888	.2015	.1948	.1987	•	43.79	7.85	.0063	1.48	8.03
24	44.54	14.15	.7131	1.51	13.12	.5640	.2063	.1953	.1660	•	43.92	9.66	.0669	1.52	10.76
36	44.47	14.30	.6149	1.42	13.20	.3441	.2130	.1886	.1412	•	44.07	10.87	.0938	1.55	12.20
48	44.37	14.51	.5387	1.31	13.29	.1912	.2219	.1675	.1012	•	44.19	11.61	.1231	1.58	12.74
60	44.25	14.71	.4904	1.16	13.33	.0955	.2309	.1325	.0796	•	44.27	12.01	.1458	1.60	12.95
72	44.10	14.85	.4581	1.04	13.39	.0663	.2375	.1003	.0610	•	44.35	12.24	.1637	1.63	13.02

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 14
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
41.24	12.35	.1337	1.42	10.43	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	41.19	12.45	.7787	1.32	10.43	.7653	.1524	.1794	.0964
24	41.17	12.54	.6646	1.25	10.47	.5365	.1598	.1988	.0613
36	41.09	12.64	.5803	1.18	10.52	.3441	.1668	.1815	.0242
48	40.97	12.84	.4905	1.10	10.57	.2031	.1747	.1673	-.0040
60	40.86	13.00	.4358	1.02	10.60	.1296	.1858	.1426	.0024
72	40.70	13.10	.4055	.93	10.63	.0772	.1919	.1298	-.0003

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	40.37	1.17

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
40.60	7.74	.0268	1.27	6.68
40.71	9.21	.0398	1.30	8.72
40.82	10.02	.0686	1.34	9.71
40.94	10.70	.0805	1.37	10.12
41.02	11.07	.0906	1.39	10.27
41.09	11.25	.0946	1.40	10.33

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MCNTH OF RECORD   — MARCH
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 15
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	36.18	10.66	.1018	1.39	9.08	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	35.51	1.32

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	36.14	10.79	.7448	1.29	9.11	.7417	.1216	.1746	.0493	35.71	7.10	.0044	1.37	6.04
24	36.06	10.85	.6258	1.23	9.07	.5252	.1268	.1920	.0146	35.83	8.29	.0224	1.38	7.64
36	35.98	10.96	.5143	1.15	9.07	.3390	.1332	.1972	-.0218	35.92	9.09	.0368	1.39	8.43
48	35.87	11.09	.4211	1.07	9.07	.2100	.1400	.1734	-.0106	36.01	9.64	.0480	1.40	8.78
60	35.71	11.21	.3526	.98	9.09	.1135	.1491	.1476	-.0133	36.08	9.95	.0608	1.40	8.95
72	35.59	11.26	.3174	.86	9.09	.0414	.1522	.1197	-.0128	36.12	10.09	.0695	1.39	9.02

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — MARCH
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM) — 16
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
30.54	9.31	.0516	1.15	7.78	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	30.48	9.44	.7293	1.09	7.78	.7610	.0649	.1184	-.0161
24	30.43	9.52	.5845	1.02	7.77	.5576	.0679	.1562	-.0396
36	30.33	9.59	.4666	.95	7.75	.3825	.0736	.1615	-.0542
48	30.26	9.67	.3779	.87	7.75	.2265	.0810	.1537	-.0716
60	30.11	9.75	.3277	.78	7.77	.1257	.0907	.1433	-.0580
72	30.01	9.78	.2821	.64	7.74	.0654	.0925	.1232	-.0580

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
30.22	1.19

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
30.34	6.34	.0300	1.21	5.02
30.40	7.51	.0057	1.22	6.40
30.46	8.19	.0114	1.22	7.12
30.48	8.56	.0175	1.21	7.51
30.53	8.75	.0158	1.20	7.65
30.54	8.89	.0226	1.20	7.71

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   — MARCH   Y = V(AT T)
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 17   XP = U(AT T + DT)
ALPHA ANGLE   — 90.0   YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	24.31	8.46	.0734	1.22	6.85	930		24.35	1.28

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	24.30	8.52	.7028	1.16	6.82	.7281	.0833	.1703	-.0392	24.33	5.96	.0503	1.31	4.63
24	24.25	8.58	.5484	1.09	6.80	.5462	.0823	.2073	-.0890	24.33	6.98	.0460	1.33	5.63
36	24.14	8.67	.4127	1.04	6.80	.3584	.0892	.2253	-.0769	24.36	7.64	.0233	1.33	6.25
48	24.06	8.72	.3381	1.00	6.81	.2256	.0964	.2252	-.0574	24.38	7.92	.0177	1.32	6.52
60	23.99	8.83	.2668	.93	6.81	.1125	.1111	.2151	-.0334	24.38	8.08	.0189	1.31	6.66
72	23.86	8.89	.2681	.84	6.77	.0338	.1156	.1883	-.0136	24.41	8.14	.0248	1.29	6.73

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — MARCH
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 18
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
17.64	7.69	.0998	.82	5.64	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
17.71	.80

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	17.64	7.76	.5996	.76	5.66	.6664	.1022	.1864	.0062	17.68	6.14	.0411	.86	4.15
24	17.60	7.74	.4475	.68	5.64	.5201	.1062	.2235	-.0508	17.68	6.84	.0661	.90	4.73
36	17.51	7.77	.3634	.64	5.62	.3431	.1176	.2117	-.0565	17.69	7.12	.0641	.90	5.21
48	17.40	7.78	.3101	.57	5.62	.2367	.1356	.2207	-.0364	17.72	7.29	.0530	.92	5.38
60	17.32	7.90	.2533	.51	5.63	.1338	.1515	.1778	-.0238	17.72	7.42	.0652	.90	5.52
72	17.23	8.01	.2424	.45	5.64	.0622	.1502	.1593	-.0016	17.74	7.46	.0656	.89	5.57

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   — MARCH   Y = V(AT T)
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 19   XP = U(AT T + DT)
ALPHA ANGLE   — 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   *   CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                      *   FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	11.16	6.97	.1247	.49	4.60	930		11.05	.45

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	11.18	7.00	.5068	.43	4.60	.6164	.1315	.1551	.0490	11.09	6.01	.0841	.49	3.61
24	11.13	7.01	.4100	.35	4.61	.4187	.1327	.1928	-.0138	11.12	6.34	.0894	.52	4.13
36	11.10	7.03	.3086	.35	4.65	.2305	.1340	.1367	-.0274	11.14	6.62	.1062	.50	4.45
48	11.04	7.06	.2847	.31	4.69	.1668	.1376	.1233	-.0078	11.15	6.68	.1031	.51	4.51
60	10.94	7.12	.1985	.26	4.67	.1308	.1434	.1055	.0153	11.18	6.83	.1089	.51	4.55
72	10.87	7.21	.2109	.21	4.67	.0931	.1416	.0691	.0297	11.20	6.82	.1134	.51	4.58

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD - MARCH   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 20   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	6.66	6.55	.1189	.22	3.97	930		6.30	.23

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	6.65	6.55	.4725	.18	3.99	.5066	.1246	.1745	.0784	6.50	5.77	.0356	.22	3.40
24	6.56	6.55	.3621	.16	3.99	.4228	.1267	.1560	.0425	6.56	6.10	.0760	.24	3.58
36	6.50	6.56	.2754	.17	3.98	.2117	.1285	.1818	.0524	6.61	6.29	.0707	.21	3.83
48	6.44	6.59	.2584	.16	3.99	.2016	.1307	.1501	.0220	6.62	6.32	.0877	.22	3.86
60	6.36	6.57	.1715	.17	4.00	.1151	.1405	.1660	.0225	6.65	6.45	.0936	.22	3.90
72	6.26	6.56	.1846	.14	4.01	.1464	.1465	.1446	.0150	6.66	6.43	.0972	.24	3.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 21
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
3.71	6.21	.0719	-.10	3.61	930		3.10	-.11

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	3.68	6.22	.4861	-.11	3.60	.3469	.0699	.1383	.0304		3.43	5.43	.0072	-.14	3.36
24	3.62	6.18	.3967	-.10	3.59	.3760	.0693	.1128	-.0265		3.50	5.69	.0557	-.13	3.33
36	3.59	6.16	.3033	-.07	3.58	.1780	.0623	.1255	-.0264		3.56	5.91	.0447	-.14	3.53
48	3.57	6.14	.2793	-.08	3.59	.2302	.0668	.0709	-.0242		3.58	5.96	.0663	-.12	3.51
60	3.50	6.11	.2329	-.09	3.62	.0429	.0710	.1411	-.0292		3.62	6.03	.0422	-.14	3.57
72	3.51	6.04	.2610	-.10	3.62	.1037	.0760	.0750	-.0431		3.60	5.98	.0612	-.12	3.58

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 22
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2.07	6.31	.0503	-.14	3.67	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.41	-.07

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	1.98	6.29	.6051	-.14	3.65	.2831	.0429	.0916	-.0475	1.71	5.00	.0204	-.14	3.51
24	1.92	6.28	.5098	-.13	3.63	.4447	.0469	.0772	-.0621	1.80	5.40	.0640	-.13	3.28
36	1.86	6.30	.4113	-.14	3.62	.1073	.0421	.1193	-.0388	1.88	5.74	.0078	-.16	3.63
48	1.79	6.30	.3849	-.15	3.61	.2432	.0447	.0671	.0001	1.92	5.82	.0321	-.13	3.56
60	1.74	6.27	.3255	-.15	3.59	.0040	.0476	.0906	.0198	1.96	5.97	.0221	-.16	3.66
72	1.71	6.23	.3029	-.15	3.59	.2070	.0559	.0494	.0067	1.98	6.01	.0402	-.13	3.59

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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		QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP								CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
		MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N				GIVEN X		GIVEN Y		
		.83	6.43	.0543	—.28	3.59	930				—.03		—.20		
DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.80	6.38	.6430	—.27	3.55	.3562	.0344	.0841	—.0161	.28	4.92	.0193	—.29	3.35
24	.79	6.41	.5528	—.26	3.55	.4381	.0208	.0839	—.0486	.37	5.35	.0459	—.29	3.22
36	.71	6.41	.4644	—.26	3.55	.1617	.0159	.0676	—.0688	.47	5.67	.0405	—.30	3.54
48	.68	6.39	.4312	—.24	3.56	.2411	.0143	.0590	—.0169	.52	5.80	.0394	—.29	3.48
60	.63	6.37	.3865	—.27	3.53	.0242	.0083	.0279	.0210	.57	5.93	.0468	—.29	3.59
72	.59	6.35	.3460	—.29	3.52	.1628	.0059	.0420	.0243	.61	6.03	.0391	—.28	3.54

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12968) – CAPE KENNEDY
MONTH OF RECORD – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 24
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.53	6.81	.0817	-.43	3.71	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.31	-.32

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.49	6.76	.6524	-.42	3.71	.3827	.0737	.0277	.0112	-.01	5.15	.1112	-.39	3.43
24	.42	6.77	.5954	-.41	3.69	.3602	.0704	.0901	-.0089	.08	5.46	.0618	-.42	3.45
36	.35	6.77	.5224	-.45	3.69	.2005	.0727	.0158	-.0352	.16	5.78	.1059	-.40	3.64
48	.25	6.77	.5153	-.46	3.67	.2037	.0781	.0580	-.0050	.23	5.83	.0728	-.41	3.63
60	.15	6.77	.4177	-.48	3.67	.0705	.0734	.0071	-.0136	.32	6.18	.0905	-.42	3.70
72	.05	6.71	.4202	-.51	3.67	.1165	.0725	.0757	.0047	.37	6.18	.0587	-.42	3.68

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858) - CAPE KENNEDY
MONTH OF RECORD - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 25
ALPHA ANGLE - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
.82	7.57	.1226	-.56	3.42	930		.13	-.45

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.78	7.53	.6640	-.59	3.41	.4636	.1216	.0835	.1121	.40	5.66	.0798	-.50	3.03
24	.70	7.55	.6439	-.57	3.39	.4311	.1193	.1088	.1077	.46	5.79	.0574	-.52	3.08
36	.64	7.57	.5755	-.59	3.40	.2513	.1276	.0855	.0903	.53	6.19	.0877	-.53	3.31
48	.56	7.53	.5560	-.59	3.41	.2295	.1304	.1016	.0870	.58	6.29	.0781	-.54	3.32
60	.48	7.51	.5003	-.61	3.38	.1155	.1375	.0666	.0696	.64	6.56	.1039	-.55	3.39
72	.38	7.49	.4695	-.62	3.36	.1109	.1381	.0768	.1115	.72	6.68	.0935	-.55	3.39

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – MARCH
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 26
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.62	8.32	.1246	-.61	3.35	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.01	-.54

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	1.58	8.29	.7819	-.61	3.35	.5143	.1268	.0958	.1162	1.18	5.19	.0767	-.58	2.87
24	1.52	8.33	.7257	-.62	3.36	.4024	.1333	.0984	.0984	1.25	5.73	.0835	-.59	3.07
36	1.45	8.35	.6561	-.62	3.37	.2431	.1409	.0698	.0748	1.33	6.28	.1135	-.60	3.25
48	1.39	8.29	.6445	-.61	3.37	.1956	.1401	.0740	.0696	1.37	6.36	.1079	-.60	3.28
60	1.34	8.25	.5914	-.63	3.38	.1038	.1476	.0490	.0526	1.41	6.71	.1237	-.61	3.33
72	1.30	8.23	.5406	-.64	3.39	.0682	.1461	.0533	.0828	1.47	7.00	.1139	-.61	3.34

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   — MARCH   Y = V(AT T)
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM)   — 27   XP = U(AT T + DT)
ALPHA ANGLE   — 90.0   YP = V(AT T + DT)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP									*	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	*		GIVEN X	GIVEN Y		
	2.04	9.42	.1066	-.62	3.65	930	*		1.41	-.56		

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	*	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	2.01	9.38	.8223	-.62	3.64	.4520	.1078	.0919	.1438	*	1.56	5.33	.0126	-.61	3.25
24	1.96	9.39	.7720	-.60	3.67	.4345	.1167	.0570	.1261	*	1.62	5.98	.0821	-.60	3.28
36	1.92	9.38	.7006	-.62	3.67	.2412	.1202	.0569	.1441	*	1.70	6.70	.0760	-.61	3.54
48	1.84	9.33	.6691	-.61	3.68	.2355	.1208	.0259	.0970	*	1.76	7.00	.1183	-.61	3.54
60	1.76	9.29	.6234	-.63	3.69	.0819	.1247	.0270	.0804	*	1.83	7.37	.1149	-.62	3.63
72	1.67	9.27	.5638	-.63	3.69	.0729	.1265	.0000	.0584	*	1.89	7.78	.1305	-.62	3.64

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) – CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3	1/56 – 12/70	0	90.0	.07	3.20	-.2107	.00	3.57	930
3	1/56 – 12/70	1	90.0	3.18	7.05	.0096	1.64	6.24	930
3	1/56 – 12/70	2	90.0	7.28	7.30	.0412	1.31	6.13	930
3	1/56 – 12/70	3	90.0	10.87	8.27	.0818	1.28	6.64	930
3	1/56 – 12/70	4	90.0	14.56	9.28	.0903	1.08	7.35	930
3	1/56 – 12/70	5	90.0	18.59	10.23	.1566	1.12	7.88	930
3	1/56 – 12/70	6	90.0	22.67	11.10	.1958	1.45	8.66	930
3	1/56 – 12/70	7	90.0	26.54	12.07	.2262	1.75	9.64	930
3	1/56 – 12/70	8	90.0	30.26	13.06	.2149	1.88	10.45	930
3	1/56 – 12/70	9	90.0	34.12	14.26	.1757	1.76	12.13	930
3	1/56 – 12/70	10	90.0	38.06	15.53	.1485	1.75	13.59	930
3	1/56 – 12/70	11	90.0	41.75	15.95	.1332	1.47	15.24	930
3	1/56 – 12/70	12	90.0	44.58	15.38	.1701	1.53	14.81	930
3	1/56 – 12/70	13	90.0	44.61	13.79	.1882	1.66	13.10	930
3	1/56 – 12/70	14	90.0	41.24	12.35	.1337	1.42	10.43	930
3	1/56 – 12/70	15	90.0	36.18	10.66	.1018	1.39	9.08	930
3	1/56 – 12/70	16	90.0	30.54	9.31	.0516	1.15	7.78	930
3	1/56 – 12/70	17	90.0	24.31	8.46	.0734	1.22	6.85	930
3	1/56 – 12/70	18	90.0	17.64	7.69	.0998	.82	5.64	930
3	1/56 – 12/70	19	90.0	11.16	6.97	.1247	.49	4.60	930
3	1/56 – 12/70	20	90.0	6.66	6.55	.1189	.22	3.97	930
3	1/56 – 12/70	21	90.0	3.71	6.21	.0719	-.10	3.61	930
3	1/56 – 12/70	22	90.0	2.07	6.31	.0503	-.14	3.67	930
3	1/56 – 12/70	23	90.0	.83	6.43	.0543	-.28	3.59	930
3	1/56 – 12/70	24	90.0	.53	6.81	.0817	-.43	3.71	930
3	1/56 – 12/70	25	90.0	.82	7.57	.1226	-.56	3.42	930
3	1/56 – 12/70	26	90.0	1.62	8.32	.1246	-.61	3.35	930
3	1/56 – 12/70	27	90.0	2.04	9.42	.1066	-.62	3.65	930

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 0
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-1.08	3.18	-.1579	.47	3.14	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-1.10	3.17	.3869	.49	3.12	.4599	-.1629	.2047	-.2686
24	-1.11	3.13	.3944	.49	3.10	.2597	-.1660	.1833	-.3591
36	-1.14	3.11	.0509	.51	3.10	.0143	-.1700	.2010	-.1846
48	-1.14	3.10	.2207	.52	3.09	-.0461	-.1670	.0541	-.1676
60	-1.16	3.09	.0271	.52	3.09	-.1031	-.1690	.0816	-.0552
72	-1.15	3.09	.2084	.52	3.07	-.0578	-.1640	.0025	-.1026

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-1.07	.46

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-1.06	2.85	-.1759	.47	2.64
-1.06	2.76	-.1748	.47	2.94
-1.07	3.12	-.1657	.48	3.07
-1.06	3.07	-.1813	.48	3.13
-1.08	3.17	-.1663	.48	3.11
-1.06	3.10	-.1668	.47	3.13

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — APRIL
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM)   — 1
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.96	6.56	-.0311	1.20	5.26	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.94	6.51	.7090	1.19	5.24	.6002	-.0381	.2405	-.3472
24	.92	6.44	.4487	1.19	5.20	.3246	-.0422	.2940	-.4329
36	.89	6.38	.2233	1.18	5.19	.0633	-.0461	.1978	-.3439
48	.86	6.33	.1625	1.19	5.15	-.0249	-.0447	.1068	-.1993
60	.84	6.30	.1481	1.19	5.16	-.0385	-.0342	.0648	-.1239
72	.87	6.32	.1755	1.20	5.11	-.0388	-.0328	.0288	-.0914

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.89	1.20

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.92	4.12	-.0132	1.19	3.97
.94	5.20	-.0328	1.20	4.70
.96	6.91	-.0570	1.20	5.14
.96	6.35	-.0544	1.20	5.23
.97	6.44	-.0460	1.20	5.24
.97	6.44	-.0402	1.20	5.25

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 2
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	3.65	7.14	.0651	.16	5.17	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	3.62	7.06	.7492	.12	5.17	.6288	.0586	.2764	-.2028
24	3.57	7.00	.5646	.10	5.14	.3649	.0544	.2923	-.2958
36	3.55	6.93	.3805	.08	5.11	.1314	.0496	.2270	-.2625
48	3.50	6.88	.3048	.07	5.09	.0306	.0477	.1451	-.1918
60	3.48	6.83	.2523	.10	5.08	-.0047	.0578	.1008	-.1005
72	3.48	6.83	.2460	.09	5.06	-.0213	.0574	.0488	-.0829

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	3.46	.19

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.50	4.39	.0213	.17	3.83
3.54	5.41	.0213	.17	4.61
3.57	6.29	.0148	.15	5.00
3.60	6.64	.0280	.16	5.12
3.63	6.86	.0402	.16	5.15
3.63	6.88	.0527	.15	5.17

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 3
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
6.04	8.04	.0509	-.82	5.97	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
5.91	-.70

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.99	7.99	.8105	-.89	5.97	.6693	.0530	.2290	-.1786	5.92	4.36	.0289	-.70	4.28
24	5.91	7.94	.6312	-.93	5.95	.4152	.0493	.2621	-.2572	5.95	5.79	.0028	-.73	5.23
36	5.86	7.86	.4773	-.97	5.92	.2227	.0465	.2182	-.2241	5.98	6.78	-.0010	-.75	5.68
48	5.78	7.80	.3850	-.98	5.90	.1403	.0423	.1490	-.1765	6.02	7.26	.0219	-.77	5.85
60	5.72	7.73	.3395	-.94	5.87	.0765	.0502	.1061	-.1324	6.06	7.47	.0277	-.79	5.92
72	5.70	7.73	.3200	-.93	5.83	.0422	.0487	.0666	-.1134	6.07	7.55	.0370	-.80	5.95

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — APRIL
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 4
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8.60	8.74	.0932	-1.40	6.56	500

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
8.44	-1.12

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	8.52	8.70	.8334	-1.48	6.55	.6774	.0935	.2339	-.1302	8.43	4.47	.0982	-1.18	4.69
24	8.44	8.66	.6790	-1.48	6.55	.4400	.0903	.2388	-.1880	8.48	6.03	.0600	-1.25	5.74
36	8.35	8.61	.5412	-1.50	6.50	.2880	.0853	.1901	-.1958	8.52	7.04	.0745	-1.29	6.19
48	8.24	8.56	.4631	-1.53	6.47	.1673	.0783	.1336	-.1648	8.58	7.54	.0746	-1.32	6.42
60	8.18	8.50	.4086	-1.46	6.42	.0993	.0772	.0788	-.1273	8.63	7.85	.0851	-1.36	6.51
72	8.15	8.48	.3791	-1.42	6.42	.0771	.0760	.0567	-.1101	8.66	7.99	.0899	-1.37	6.53

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 7
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
16.79	11.65	.1917	-2.27	6.02	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	16.60	-2.07

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	16.71	11.65	.8749	-2.30	8.03	.6886	.1976	.2559	.0759	16.66	5.52	.0350	-2.13	5.73
24	16.49	11.62	.7590	-2.36	7.97	.5065	.1898	.2281	-.0179	16.81	7.34	.1797	-2.12	6.83
36	16.28	11.58	.6616	-2.40	7.95	.3387	.1787	.1599	-.0768	16.92	8.42	.2193	-2.14	7.50
48	16.14	11.50	.5883	-2.46	7.85	.2480	.1732	.0951	-.0844	16.97	9.16	.2359	-2.16	7.75
60	16.05	11.41	.5272	-2.43	7.64	.2193	.1658	.0511	-.0725	17.02	9.72	.2451	-2.19	7.82
72	16.00	11.36	.4744	-2.41	7.82	.2185	.1618	.0282	-.0626	17.02	10.12	.2464	-2.20	7.82

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD – APRIL	Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70	
ALTITUDE (KM) – 8	XP = U(AT T + DT)
ALPHA ANGLE – 90.0	YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP · CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
19.71	12.80	.1907	-2.69	8.76	900	19.58	-2.52

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	19.59	12.79	.8573	-2.71	8.76	.7072	.1918	.2597	.0773	19.67	6.49	.0780	-2.56	6.10
24	19.35	12.77	.7390	-2.77	8.73	.5300	.1902	.2421	.0080	19.83	8.45	.1420	-2.54	7.32
36	19.15	12.72	.6385	-2.78	8.71	.3669	.1833	.1853	-.0446	19.93	9.62	.1847	-2.56	8.08
48	18.95	12.65	.5669	-2.82	8.63	.2636	.1733	.1217	-.0561	20.01	10.35	.2061	-2.58	8.43
60	18.86	12.56	.5041	-2.78	8.61	.2274	.1680	.0593	-.0480	20.04	10.92	.2294	-2.62	8.53
72	18.80	12.49	.4500	-2.74	8.61	.2075	.1655	.0172	-.0509	20.04	11.31	.2422	-2.65	8.57

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 9
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
22.54	14.47	.2126	-3.06	10.00	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	22.39	14.44	.8614	-3.08	10.00	.7113	.2131	.2728	.1092
24	22.14	14.39	.7364	-3.13	9.96	.5017	.2137	.2628	.0390
36	21.91	14.33	.6393	-3.16	9.95	.3452	.2091	.2129	-.0164
48	21.68	14.26	.5582	-3.20	9.89	.2484	.2005	.1407	-.0283
60	21.56	14.18	.5007	-3.15	9.89	.2300	.1955	.0758	-.0173
72	21.48	14.09	.4508	-3.11	9.88	.2008	.1916	.0179	-.0136

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	22.32	-2.83

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
22.44	7.27	.0821	-2.90	6.92
22.62	9.63	.1314	-2.90	8.50
22.74	10.90	.1770	-2.91	9.27
22.84	11.82	.2110	-2.93	9.64
22.89	12.41	.2403	-2.97	9.72
22.90	12.83	.2591	-3.01	9.79

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – APRIL
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 10
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	25.57	15.70	.2638	-3.69	11.49	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	25.32	-3.37

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	25.41	15.62	.8665	-3.76	11.49	.7293	.2638	.2968	.1711	25.45	7.78	.1398	-3.42	7.77
24	25.12	15.57	.7476	-3.79	11.44	.5372	.2609	.2695	.0946	25.66	10.30	.2062	-3.45	9.57
36	24.87	15.55	.6477	-3.83	11.38	.3819	.2598	.2063	.0471	25.80	11.80	.2506	-3.48	10.55
48	24.69	15.47	.5727	-3.91	11.28	.2856	.2571	.1302	.0271	25.86	12.72	.2859	-3.51	11.00
60	24.53	15.37	.5168	-3.92	11.28	.2303	.2521	.0570	.0201	25.92	13.32	.3145	-3.56	11.19
72	24.42	15.27	.4607	-3.88	11.26	.2077	.2461	.0049	.0215	25.95	13.86	.3267	-3.60	11.23

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — APRIL
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 11
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
28.80	16.91	.2498	-4.35	12.98	900

DT HR	MEAN XP	S.D. XP	R (X.XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	28.66	16.86	.8695	-4.43	12.99	.7316	.2512	.2688	.1894
24	28.35	16.76	.7622	-4.47	12.92	.5346	.2504	.2348	.1401
36	28.10	16.67	.6723	-4.50	12.84	.3951	.2451	.1764	.1067
48	27.88	16.59	.5945	-4.54	12.75	.3069	.2391	.1051	.0878
60	27.76	16.45	.5242	-4.54	12.81	.2311	.2317	.0364	.0665
72	27.64	16.30	.4758	-4.51	12.80	.1986	.2236	-.0233	.0681

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	28.59	-4.06

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
28.73	8.33	.1102	-4.09	8.77
28.95	10.91	.1787	-4.12	10.88
29.10	12.47	.2267	-4.15	11.87
29.21	13.56	.2668	-4.18	12.34
29.22	14.36	.2948	-4.25	12.62
29.26	14.85	.3133	-4.31	12.68

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	– CAPE KENNEDY		X = U(AT T)
MONTH OF RECORD	– APRIL		Y = V(AT T)
PERIOD OF RECORD	– 1/56 – 12/70		
ALTITUDE (KM)	– 12		XP = U(AT T + DT)
ALPHA ANGLE	– 90.0		YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
31.91	17.34	.2684	-4.73	13.94	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	31.72	17.27	.8846	-4.83	14.00	.7537	.2669	.2625	.2206
24	31.38	17.17	.7857	-4.93	13.95	.5733	.2636	.2242	.1735
36	31.13	17.12	.6906	-5.02	13.89	.4332	.2597	.1631	.1365
48	30.85	17.02	.6168	-5.06	13.79	.3302	.2502	.0966	.1225
60	30.67	16.86	.5474	-5.08	13.82	.2616	.2406	.0381	.1002
72	30.52	16.71	.4960	-5.06	13.79	.2181	.2288	-.0138	.0887

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
31.73	-4.66

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
31.91	8.07	.1563	-4.60	9.12
32.18	10.71	.2199	-4.56	11.38
32.31	12.51	.2675	-4.56	12.55
32.45	13.63	.2954	-4.59	13.16
32.49	14.50	.3173	-4.64	13.45
32.52	15.05	.3325	-4.71	13.58

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD – APRIL   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 13   XP = U(AT T + DT)
ALPHA ANGLE – 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	33.91	16.46	.3013	-4.76	13.14	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	33.68	16.39	.8953	-4.89	13.24	.7903	.2953	.2855	.2592
24	33.33	16.33	.7968	-5.03	13.22	.6065	.2937	.2502	.2103
36	33.02	16.26	.7000	-5.08	13.16	.4471	.2917	.1899	.1653
48	32.78	16.14	.6387	-5.14	13.10	.3471	.2836	.1170	.1466
60	32.57	16.02	.5784	-5.13	13.11	.2646	.2764	.0625	.1386
72	32.43	15.93	.5246	-5.12	13.07	.2337	.2685	.0253	.1273

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	33.71	-4.75

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
33.94	7.33	.1828	-4.65	8.02
34.21	9.94	.2423	-4.58	10.40
34.39	11.74	.2909	-4.59	11.73
34.51	12.65	.3308	-4.61	12.32
34.58	13.42	.3444	-4.67	12.68
34.60	14.01	.3523	-4.71	12.77

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD — APRIL	Y = V(AT T)
PERIOD OF RECORD — 1/56 — 12/70	
ALTITUDE (KM) — 14	XP = U(AT T + DT)
ALPHA ANGLE — 90.0	YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
32.07	14.38	.3158	-4.34	11.44	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
31.89	-4.30

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	31.85	14.33	.8711	-4.44	11.54	.8000	.3113	.3166	.2624	32.10	7.06	.1600	-4.24	6.81
24	31.57	14.32	.7799	-4.55	11.55	.6357	.3117	.2840	.2077	32.32	8.99	.2418	-4.17	8.77
36	31.31	14.23	.6936	-4.64	11.52	.4749	.3133	.2212	.1649	32.47	10.33	.2952	-4.16	10.03
48	31.18	14.19	.6198	-4.73	11.47	.3608	.3092	.1601	.1197	32.50	11.23	.3318	-4.16	10.65
60	31.05	14.10	.5537	-4.73	11.47	.2748	.3036	.1092	.1114	32.53	11.95	.3387	-4.21	10.99
72	30.96	13.96	.4999	-4.74	11.43	.2221	.2961	.0509	.0970	32.54	12.43	.3583	-4.26	11.15

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
28.08	12.04	.2965	-3.47	9.14	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	27.88	11.92	.8572	-3.55	9.17	.8077	.2910	.3285	.2564
24	27.65	11.86	.7825	-3.68	9.18	.6575	.2893	.3111	.1943
36	27.41	11.76	.6939	-3.77	9.17	.5146	.2986	.2628	.1455
48	27.25	11.69	.6290	-3.87	9.16	.4053	.2879	.2068	.1068
60	27.17	11.59	.5467	-3.90	9.17	.3212	.2877	.1508	.0893
72	27.06	11.51	.4851	-3.90	9.16	.2529	.2852	.0928	.0753

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
28.03	-3.39

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
28.21	6.20	.0316	-3.33	5.32
28.36	7.49	.1578	-3.26	6.79
28.50	8.64	.2303	-3.23	7.76
28.55	9.32	.2764	-3.23	8.31
28.54	10.05	.2980	-3.28	8.64
28.55	10.50	.3165	-3.33	8.84

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD - APRIL	Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70	
ALTITUDE (KM) - 16	XP = U(AT T + DT)
ALPHA ANGLE - 90.0	YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
23.03	10.26	.2568	-3.06	7.96	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
22.98	-2.97

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	22.87	10.12	.8364	-3.15	8.01	.7936	.2633	.3144	.1965	23.12	5.62	.0363	-2.91	4.77
24	22.68	10.04	.7677	-3.21	8.01	.6448	.2716	.3066	.1523	23.25	6.55	.1157	-2.88	5.99
36	22.48	9.95	.6749	-3.28	8.02	.4931	.2792	.2833	.1160	23.36	7.53	.1559	-2.86	6.82
48	22.32	9.90	.6028	-3.33	8.00	.3729	.2808	.2211	.1132	23.42	8.16	.1945	-2.88	7.33
60	22.24	9.84	.5257	-3.35	8.01	.2795	.2784	.1783	.1067	23.42	8.72	.2132	-2.90	7.60
72	22.15	9.73	.4721	-3.34	8.05	.2205	.2767	.1357	.0890	23.43	9.03	.2347	-2.94	7.74

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – APRIL   Y = V(AT T)
PERIOD OF RECORD – 1/55 – 12/70
ALTITUDE (KM)   – 5   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
11.13	9.69	.1393	-1.70	6.83	900	11.03	-1.33

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	11.03	9.67	.8375	-1.75	6.81	.6751	.1380	.2541	-.0526	11.03	5.03	.0969	-1.42	4.92
24	10.88	9.61	.7140	-1.78	6.78	.4694	.1345	.2346	-.1253	11.10	6.43	.1228	-1.48	5.92
36	10.74	9.57	.5983	-1.82	6.80	.3000	.1316	.1840	-.1640	11.14	7.40	.1354	-1.53	6.44
48	10.63	9.52	.5247	-1.85	6.76	.1915	.1251	.1252	-.1453	11.20	7.99	.1384	-1.58	6.67
60	10.56	9.50	.4687	-1.77	6.73	.1277	.1211	.0627	-.1311	11.24	8.36	.1554	-1.63	6.77
72	10.55	9.45	.4369	-1.72	6.73	.1033	.1164	.0446	-.1017	11.27	8.59	.1532	-1.65	6.79

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — APRIL
PERIOD OF RECORD   — 1/56 — 12/70
ALTITUDE (KM)   — 6
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
13.90	10.63	.1611	-1.93	7.29	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
13.75	-1.66

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	13.81	10.62	.8518	-1.98	7.30	.6961	.1629	.2560	.0121	13.79	5.40	.0790	-1.72	5.13
24	13.61	10.56	.7353	-2.01	7.30	.5042	.1600	.2328	-.0830	13.90	6.87	.1567	-1.75	6.20
36	13.48	10.52	.6361	-2.05	7.33	.3136	.1559	.1735	-.1329	13.94	7.81	.1719	-1.79	6.87
48	13.34	10.45	.5761	-2.10	7.27	.2065	.1503	.1121	-.1195	14.01	8.40	.1772	-1.82	7.11
60	13.26	10.43	.5073	-2.05	7.25	.1680	.1415	.0652	-.1065	14.06	8.95	.1891	-1.85	7.18
72	13.22	10.39	.4589	-2.03	7.23	.1759	.1349	.0369	-.0915	14.07	9.30	.1984	-1.86	7.18

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY              X  = U(AT T)
MONTH OF RECORD    - APRIL                     Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 17                        XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                      YP = V(AT T + DT)
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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
17.30	9.19	.2746	-2.45	6.71	900	17.33	-2.36

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	17.10	9.10	.7927	-2.51	6.74	.7374	.2801	.3815	.1998	17.49	5.60	-.0318	-2.32	4.37
24	16.92	9.02	.6880	-2.54	6.74	.5636	.2917	.4052	.1903	17.59	6.67	.0016	-2.28	5.28
36	16.77	8.94	.6036	-2.60	6.71	.4116	.3003	.3695	.1716	17.65	7.33	.0786	-2.26	5.87
48	16.62	8.91	.5459	-2.65	6.66	.3205	.3032	.3203	.1529	17.70	7.70	.1338	-2.25	6.16
60	16.51	8.82	.4858	-2.67	6.69	.2396	.2967	.2722	.1148	17.71	8.03	.1781	-2.26	6.36
72	16.42	8.76	.4340	-2.68	6.69	.1789	.2929	.2248	.1173	17.71	8.28	.2046	-2.28	6.49

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 18
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	10.91	7.85	.2764	-2.03	5.23	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
11.01	-1.95

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	10.76	7.76	.7655	-2.04	5.26	.7087	.2867	.3799	.1882	11.11	5.04	.0138	-1.94	3.56
24	10.61	7.71	.6752	-2.07	5.24	.5419	.3041	.4197	.1598	11.18	5.78	.0236	-1.90	4.17
36	10.49	7.67	.6043	-2.11	5.19	.3768	.3143	.4144	.1328	11.23	6.24	.0601	-1.87	4.56
48	10.35	7.63	.5351	-2.11	5.16	.2569	.3178	.3614	.1353	11.27	6.62	.1140	-1.86	4.81
60	10.23	7.53	.4855	-2.14	5.14	.1840	.3130	.3244	.1281	11.31	6.86	.1471	-1.85	4.93
72	10.14	7.44	.4675	-2.15	5.12	.1419	.3083	.2610	.1032	11.34	6.93	.1848	-1.87	5.04

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 19
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	5.31	7.02	.2816	-1.38	4.22	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	5.39	-1.26

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.19	6.95	.6717	-1.40	4.22	.5725	.2895	.3212	.1771	5.44	5.20	.1260	-1.29	3.39
24	5.09	6.89	.6224	-1.40	4.21	.4633	.3043	.3266	.1441	5.49	5.49	.1429	-1.29	3.65
36	4.97	6.82	.5662	-1.44	4.13	.2905	.3135	.3553	.1617	5.55	5.79	.1108	-1.27	3.86
48	4.87	6.76	.5245	-1.44	4.10	.2341	.3250	.3602	.1636	5.59	5.98	.1190	-1.26	3.90
60	4.81	6.68	.4604	-1.46	4.08	.1053	.3215	.3393	.1564	5.59	6.23	.1507	-1.26	3.97
72	4.79	6.61	.4457	-1.47	4.09	.0967	.3182	.2861	.1409	5.59	6.29	.1797	-1.28	4.04

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

```
STATION (12868)   - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD   - APRIL                 Y  = V(AT T)
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     - 20                    XP = U(AT T + DT)
ALPHA ANGLE       - 90.0                  YP = V(AT T + DT)
```

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.67	6.07	.2286	-1.05	3.87	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.80	-.86

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	1.59	6.03	.6877	-1.05	3.86	.4477	.2322	.3052	.1542	1.82	4.41	.0331	-.94	3.37
24	1.51	6.01	.6256	-1.08	3.84	.4059	.2349	.3189	.1466	1.85	4.74	.0423	-.92	3.43
36	1.46	5.98	.5413	-1.10	3.82	.2075	.2335	.2706	.1415	1.87	5.11	.0998	-.96	3.69
48	1.41	5.94	.5198	-1.10	3.81	.1973	.2322	.2575	.1148	1.88	5.19	.1171	-.95	3.70
60	1.38	5.91	.4752	-1.11	3.79	.1183	.2221	.2555	.0977	1.98	5.34	.1268	-.96	3.74
72	1.33	5.84	.4444	-1.11	3.78	.1251	.2207	.2239	.0628	1.88	5.44	.1516	-.96	3.76

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

```
STATION (12868)   - CAPE KENNEDY           X  = U(AT T)
MONTH OF RECORD   - APRIL                  Y  = V(AT T)
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     - 21                     XP = U(AT T + DT)
ALPHA ANGLE       - 90.0                   YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-.59	5.24	.1737	-1.06	3.25	900	-.58	-.99

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.63	5.24	.6353	-1.08	3.23	.2572	.1711	.1484	.1171	-.56	4.04	.1043	-1.04	3.12
24	-.70	5.23	.6019	-1.08	3.23	.3772	.1738	.1193	.1237	-.52	4.18	.1285	-1.02	3.01
36	-.75	5.20	.5384	-1.11	3.22	.0980	.1774	.1124	.1194	-.50	4.41	.1333	-1.04	3.22
48	-.79	5.16	.4578	-1.10	3.22	.1898	.1689	.1443	.0684	-.50	4.66	.1259	-1.03	3.17
60	-.81	5.15	.3665	-1.10	3.18	.0070	.1657	.1182	.0906	-.50	4.87	.1416	-1.05	3.23
72	-.83	5.10	.3367	-1.08	3.18	.0254	.1517	.1046	.0309	-.51	4.93	.1481	-1.05	3.24

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 22
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-2.01	4.89	.0979	-.80	3.03	900

GIVEN X: -2.08   GIVEN Y: -.75

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-2.01	4.88	.6668	-.80	3.04	.2639	.1011	.0704	.1493	-2.05	3.62	.0416	-.79	2.92
24	-2.05	4.87	.6243	-.77	3.03	.3839	.1021	.0930	.0802	-2.03	3.82	.0466	-.79	2.79
36	-2.07	4.85	.5380	-.78	3.01	.1280	.0998	.0811	.0800	-2.01	4.12	.0612	-.79	3.00
48	-2.10	4.83	.4627	-.76	2.99	.2014	.1020	.1137	.0970	-2.00	4.32	.0414	-.79	2.96
60	-2.14	4.82	.3922	-.76	3.01	-.0315	.0956	.0495	.0501	-1.98	4.49	.0859	-.80	3.03
72	-2.18	4.79	.3271	-.75	3.01	.0419	.0957	.0524	.0735	-1.98	4.61	.0840	-.79	3.03

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – APRIL
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 23
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-2.73	4.92	.0222	-.72	2.94	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-2.78	4.91	.6293	-.73	2.92	.3018	.0264	-.0018	.1171
24	-2.83	4.82	.6113	-.72	2.90	.3794	.0420	.0396	.1013
36	-2.84	4.78	.5105	-.70	2.88	.1304	.0458	-.0279	.1303
48	-2.86	4.77	.4548	-.67	2.86	.1347	.0476	.0203	.1082
60	-2.87	4.76	.3467	-.65	2.85	-.0281	.0551	-.0075	.0436
72	-2.89	4.72	.3037	-.62	2.84	-.0705	.0542	.0119	.0290

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-2.81	-.75

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-2.75	3.79	-.0096	-.73	2.80
-2.72	3.88	-.0420	-.74	2.72
-2.72	4.20	.0263	-.73	2.92
-2.72	4.36	.0016	-.74	2.92
-2.71	4.61	.0272	-.72	2.94
-2.71	4.69	.0205	-.71	2.93

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – APRIL   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 24   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	-2.87	5.27	.0941	-.75	2.97	900	-2.87	-.78

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-2.93	5.27	.7036	-.75	2.94	.3301	.0986	.0574	.1610	-2.83	3.71	.0356	-.76	2.81
24	-2.97	5.22	.6460	-.74	2.93	.3543	.0975	.0744	.1087	-2.81	4.01	.0421	-.76	2.78
36	-2.99	5.21	.5552	-.70	2.91	.1201	.0999	.0477	.1545	-2.82	4.35	.0684	-.75	2.95
48	-3.01	5.17	.4977	-.65	2.88	.1009	.0896	.0298	.1314	-2.82	4.54	.0823	-.76	2.96
60	-3.00	5.12	.3735	-.65	2.88	-.0084	.0892	-.0296	.1269	-2.84	4.86	.1145	-.75	2.97
72	-3.02	5.11	.3068	-.59	2.90	-.0425	.0877	.0055	.0252	-2.82	5.01	.0971	-.74	2.97

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 25
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-2.61	5.85	.1895	-.78	3.00	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-2.65	5.86	.7166	-.77	3.00	.3562	.1875	.1388	.2101
24	-2.66	5.82	.6793	-.74	2.99	.3075	.1839	.0759	.1695
36	-2.70	5.78	.5763	-.72	2.98	.1057	.1775	.0482	.1635
48	-2.72	5.73	.5316	-.70	2.97	.0889	.1737	-.0046	.1463
60	-2.74	5.69	.3966	-.70	2.97	-.0355	.1615	-.0365	.1225
72	-2.73	5.65	.3445	-.65	2.98	-.0653	.1589	-.0305	.0413

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-2.57	-.85

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-2.57	4.06	.0993	-.81	2.79
-2.56	4.29	.1786	-.81	2.85
-2.55	4.77	.1921	-.79	2.98
-2.55	4.95	.2222	-.80	2.98
-2.56	5.36	.2249	-.78	2.99
-2.55	5.49	.2127	-.77	2.99

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — APRIL
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 26
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-2.18	6.71	.1775	-.73	2.97	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-2.20	-.74

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-2.25	6.70	.7869	-.74	2.97	.3350	.1742	.1484	.1984	-2.15	4.12	.0716	-.73	2.79
24	-2.27	6.64	.7436	-.72	2.94	.3168	.1644	.0926	.1098	-2.13	4.49	.1776	-.73	2.82
36	-2.31	6.56	.6447	-.71	2.94	.0877	.1594	.0870	.1235	-2.11	5.13	.1579	-.73	2.95
48	-2.33	6.52	.6089	-.68	2.95	.0768	.1590	.0363	.0859	-2.10	5.32	.1975	-.73	2.96
60	-2.39	6.47	.5032	-.65	2.93	-.0814	.1576	-.0059	.0652	-2.08	5.80	.2082	-.72	2.96
72	-2.40	6.44	.4469	-.63	2.94	-.0362	.1532	-.0223	.0226	-2.08	5.99	.2083	-.73	2.97

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 27
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.36	7.23	.0995	-.77	3.15	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-1.43	7.21	.8264	-.77	3.14	.3787	.0988	.1412	.1398
24	-1.48	7.17	.7854	-.78	3.11	.3402	.0895	.1017	.0757
36	-1.55	7.11	.6958	-.76	3.09	.1248	.0886	.1221	.0901
48	-1.59	7.07	.6514	-.75	3.08	.0852	.0888	.0654	.0365
60	-1.65	7.02	.5526	-.70	3.03	-.0397	.0946	.0811	.0602
72	-1.68	6.99	.5009	-.69	3.06	.0053	.1000	.0267	.0089

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-1.20	-.78

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-1.17	4.05	-.0748	-.76	2.90
-1.14	4.48	.0308	-.76	2.96
-1.11	5.19	.0160	-.75	3.11
-1.10	5.48	.0777	-.76	3.14
-1.10	6.03	.0664	-.75	3.14
-1.10	6.25	.0998	-.76	3.15

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) – CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
4	1/56 - 12/70	0	90.0	-1.08	3.18	-.1579	.47	3.14	900
4	1/56 - 12/70	1	90.0	.96	6.56	-.0311	1.20	5.26	900
4	1/56 - 12/70	2	90.0	3.65	7.14	.0651	.16	5.17	900
4	1/56 - 12/70	3	90.0	6.04	8.04	.0509	-.82	5.97	900
4	1/56 - 12/70	4	90.0	8.60	8.74	.0932	-1.40	6.56	900
4	1/56 - 12/70	5	90.0	11.13	9.69	.1393	-1.70	6.83	900
4	1/56 - 12/70	6	90.0	13.90	10.63	.1611	-1.93	7.29	900
4	1/56 - 12/70	7	90.0	16.79	11.65	.1917	-2.27	8.02	900
4	1/56 - 12/70	8	90.0	19.71	12.80	.1907	-2.69	8.76	900
4	1/56 - 12/70	9	90.0	22.54	14.47	.2126	-3.06	10.00	900
4	1/56 - 12/70	10	90.0	25.57	15.70	.2638	-3.69	11.19	900
4	1/56 - 12/70	11	90.0	28.80	16.91	.2498	-4.35	12.98	900
4	1/56 - 12/70	12	90.0	31.91	17.34	.2684	-4.73	13.94	900
4	1/56 - 12/70	13	90.0	33.91	16.46	.3013	-4.76	13.14	900
4	1/56 - 12/70	14	90.0	32.07	14.38	.3158	-4.34	11.44	900
4	1/56 - 12/70	15	90.0	28.08	12.04	.2965	-3.47	9.14	900
4	1/56 - 12/70	16	90.0	23.03	10.26	.2568	-3.06	7.96	900
4	1/56 - 12/70	17	90.0	17.30	9.19	.2746	-2.45	6.71	900
4	1/56 - 12/70	18	90.0	10.91	7.85	.2764	-2.03	5.23	900
4	1/56 - 12/70	19	90.0	5.31	7.02	.2816	-1.38	4.22	900
4	1/56 - 12/70	20	90.0	1.67	6.07	.2286	-1.05	3.87	900
4	1/56 - 12/70	21	90.0	-.59	5.24	.1737	-1.06	3.25	900
4	1/56 - 12/70	22	90.0	-2.01	4.89	.0979	-.80	3.03	900
4	1/56 - 12/70	23	90.0	-2.73	4.92	.0222	-.72	2.94	900
4	1/56 - 12/70	24	90.0	-2.87	5.27	.0941	-.75	2.97	900
4	1/56 - 12/70	25	90.0	-2.61	5.85	.1895	-.78	3.00	900
4	1/56 - 12/70	26	90.0	-2.18	6.71	.1775	-.73	2.97	900
4	1/56 - 12/70	27	90.0	-1.36	7.23	.0995	-.77	3.15	900

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — MAY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 0
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.67	2.89	-.0657	.53	2.55	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-1.62	.61

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-1.68	2.91	.3506	.52	2.55	.4992	-.0632	.1835	-.0273	-1.65	2.70	-.1621	.58	2.14
24	-1.68	2.89	.5448	.52	2.54	.4073	-.0583	.1206	-.1595	-1.65	2.39	-.1048	.57	2.30
36	-1.69	2.90	.1173	.52	2.54	.1924	-.0525	.1691	-.1348	-1.67	2.86	-.0772	.56	2.45
48	-1.70	2.89	.2710	.51	2.55	.1367	-.0565	.0996	-.0777	-1.66	2.75	-.0605	.55	2.51
60	-1.70	2.89	-.0568	.51	2.55	.0782	-.0601	.0908	-.0777	-1.68	2.87	-.0545	.54	2.53
72	-1.72	2.88	.1380	.51	2.56	.0901	-.0590	-.0160	-.1004	-1.66	2.85	-.0563	.54	2.54

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 1
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-.97	5.28	.1271	.94	4.25	930	-.71	.90

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-1.03	5.27	.7470	.95	4.25	.6343	.1341	.2443	-.0350	-.71	3.44	.0559	.95	3.72
24	-1.05	5.27	.5944	.94	4.24	.5158	.1374	.2856	-.0857	-.75	4.15	.0593	.98	3.33
36	-1.12	5.30	.3570	.91	4.24	.3112	.1406	.2402	-.1164	-.81	4.85	.1037	1.00	3.95
48	-1.14	5.27	.2239	.90	4.23	.2501	.1423	.1878	-.0603	-.86	5.12	.1144	.99	4.07
60	-1.17	5.25	.0931	.89	4.21	.1782	.1362	.0977	-.0766	-.92	5.24	.1367	.97	4.17
72	-1.18	5.23	.0620	.90	4.23	.1500	.1356	.0495	-.0500	-.93	5.26	.1347	.95	4.20

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — MAY
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM)   — 2
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.44	5.68	.2731	-.17	4.49	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.38	5.68	.7705	-.16	4.47	.8635	.2767	.3482	.1459
24	.36	5.66	.6514	-.16	4.46	.5422	.2741	.3392	.0799
36	.29	5.65	.4457	-.17	4.44	.3467	.2712	.2914	.0368
48	.29	5.60	.3474	-.15	4.44	.2699	.2760	.2390	.0239
60	.25	5.56	.2158	-.15	4.43	.1664	.2748	.1722	-.0035
72	.23	5.52	.1530	-.12	4.45	.1221	.2777	.1130	-.0298

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
.56	-.30

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.59	3.60	.1000	-.23	3.27
.60	4.27	.1630	-.20	3.66
.58	5.06	.2054	-.16	4.11
.56	5.31	.2325	-.16	4.25
.53	5.53	.2563	-.15	4.39
.52	5.60	.2697	-.16	4.44

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – MAY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 3
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
1.65	6.00	.2818	-.31	4.77	930		1.61	-.46

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	1.61	5.97	.8031	-.28	4.73	.7194	.2866	.3732	.1755		1.67	3.56	.0466	-.44	3.21
24	1.57	5.97	.6747	-.25	4.69	.5545	.2834	.3443	.0698		1.71	4.38	.1691	-.41	3.86
36	1.53	5.95	.5143	-.25	4.67	.3780	.2843	.3019	.0319		1.73	5.09	.2123	-.37	4.31
48	1.52	5.92	.4004	-.22	4.67	.2662	.2879	.2358	.0161		1.72	5.46	.2416	-.35	4.53
60	1.48	5.89	.2941	-.20	4.68	.1674	.2822	.1922	.0055		1.72	5.71	.2531	-.33	4.65
72	1.44	5.82	.2097	-.18	4.69	.1231	.2840	.1345	-.0312		1.73	5.84	.2728	-.32	4.71

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD — MAY   Y = V(AT T)
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 4   XP = U(AT T + DT)
ALPHA ANGLE — 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2.91	6.50	.2669	−.40	5.27	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	2.86	6.46	.8041	−.33	5.21	.7136	.2695	.3427	.1268
24	2.81	6.41	.6615	−.30	5.16	.5384	.2635	.3295	.0331
36	2.78	6.40	.5147	−.29	5.13	.3836	.2650	.2919	−.0449
48	2.76	6.39	.3944	−.25	5.12	.2679	.2658	.2452	−.0493
60	2.71	6.34	.3017	−.27	5.11	.1592	.2636	.2078	−.0616
72	2.62	6.24	.2211	−.26	5.10	.0993	.2639	.1663	−.0935

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
2.76	−.52

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
2.85	3.82	.1287	−.54	3.60
2.91	4.78	.1947	−.52	4.32
2.96	5.44	.2337	−.48	4.75
2.97	5.88	.2381	−.46	4.98
2.98	6.12	.2403	−.42	5.12
3.00	6.25	.2525	−.40	5.18

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – MAY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 5
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	4.42	6.86	.2637	-.54	5.70	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	4.36	6.80	.8177	-.49	5.65	.7390	.2618	.3172	.1537
24	4.29	5.77	.6919	-.45	5.62	.5819	.2571	.2994	.0638
36	4.25	6.75	.5525	-.44	5.57	.4044	.2607	.2578	-.0085
48	4.21	6.74	.4278	-.41	5.54	.2997	.2617	.1972	-.0292
60	4.10	6.63	.3174	-.43	5.52	.2081	.2648	.1526	-.0519
72	3.96	6.55	.2268	-.43	5.51	.1379	.2636	.1060	-.0912

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	4.21	-.88

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
4.33	3.93	.1237	-.83	3.77
4.43	4.89	.2080	-.79	4.55
4.48	5.61	.2394	-.71	5.14
4.51	6.12	.2571	-.67	5.40
4.54	6.43	.2629	-.61	5.55
4.58	6.59	.2712	-.58	5.63

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 6
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						•	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP		

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
6.06	7.47	.2556	-.64	6.52	930	•	5.67	-.82

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.96	7.37	.8113	-.57	6.46	.7666	.2577	.2935	.1733	•	5.83	4.36	.1190	-.86	4.14
24	5.88	7.34	.6943	-.53	6.41	.6187	.2563	.2584	.0840	•	5.94	5.32	.2374	-.84	5.08
36	5.80	7.28	.5653	-.51	6.35	.4524	.2661	.1971	.0236	•	6.03	6.08	.2749	-.79	5.79
48	5.73	7.26	.4597	-.47	6.32	.3305	.2666	.1421	-.0332	•	6.10	6.52	.2910	-.76	6.14
60	5.63	7.13	.3496	-.48	6.29	.2220	.2764	.0996	-.0643	•	6.15	6.88	.2840	-.72	6.35
72	5.51	7.04	.2576	-.47	6.29	.1492	.2787	.0432	-.1177	•	6.20	7.06	.2916	-.70	6.45

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 7
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T) -

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	7.76	8.17	.2787	-.60	7.29	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	7.64	8.05	.8186	-.53	7.27	.7568	.2804	.2990	.2008
24	7.53	7.98	.6945	-.49	7.23	.5927	.2844	.2657	.1416
36	7.48	7.92	.5685	-.47	7.19	.4309	.2878	.1969	.0801
48	7.38	7.86	.4702	-.41	7.17	.3154	.2910	.1487	.0281
60	7.25	7.76	.3718	-.40	7.16	.2048	.2997	.0944	-.0130
72	7.12	7.66	.2850	-.39	7.17	.1535	.3005	.0470	-.0693

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	7.27	-.82

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
7.45	4.69	.1476	-.84	4.73
7.59	5.86	.2192	-.81	5.83
7.66	6.69	.2730	-.76	6.56
7.75	7.15	.2908	-.73	6.91
7.83	7.51	.2976	-.68	7.13
7.89	7.72	.3096	-.67	7.21

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 8
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
9.43	9.09	.2551	-.44	8.27	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
8.82	-.62

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	9.31	8.98	.8226	-.38	8.24	.7502	.2621	.2828	.1909	9.03	5.16	.1087	-.66	5.42
24	9.21	8.93	.7073	-.32	8.20	.5980	.2663	.2650	.1321	9.17	6.40	.1781	-.65	6.57
36	9.15	8.90	.5842	-.29	8.14	.4586	.2700	.2123	.0845	9.26	7.34	.2279	-.62	7.31
48	9.07	8.87	.4857	-.25	8.10	.3490	.2725	.1569	.0272	9.35	7.88	.2636	-.58	7.73
60	8.93	8.77	.3733	-.22	8.11	.2574	.2767	.1109	.0007	9.44	8.38	.2696	-.55	7.98
72	8.78	8.66	.2928	-.23	8.13	.2004	.2752	.0620	-.0447	9.51	8.61	.2821	-.52	8.10

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS CF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 9
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
11.18	10.03	.2548	-.51	9.67	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
10.43	-.80

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	11.06	9.91	.8111	-.44	9.64	.7703	.2604	.2814	.1844	10.67	5.86	.1262	-.84	6.11
24	10.94	9.88	.6909	-.35	9.63	.6144	.2642	.2592	.1265	10.84	7.22	.1926	-.83	7.57
36	10.88	9.85	.5514	-.28	9.56	.4659	.2702	.2055	.0922	10.95	8.34	.2273	-.78	8.52
48	10.76	9.82	.4461	-.24	9.53	.3598	.2768	.1672	.0512	11.07	8.94	.2468	-.73	9.00
60	10.64	9.72	.3301	-.20	9.53	.2688	.2794	.1260	-.0072	11.17	9.41	.2642	-.68	9.30
72	10.48	9.64	.2618	-.19	9.54	.2232	.2796	.0786	-.0361	11.24	9.61	.2763	-.65	9.42

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD — MAY   Y = V(AT T)
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   = 10   XP = U(AT T + DT)
ALPHA ANGLE   = 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	13.24	11.44	.2736	-.53	11.11	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	13.08	11.32	.7877	-.42	11.09	.7753	.2840	.2681	.2027
24	12.97	11.29	.6678	-.32	11.08	.6322	.2937	.2647	.1360
36	12.89	11.25	.5331	-.21	11.04	.4901	.3003	.2262	.1043
48	12.73	11.24	.4325	-.15	11.03	.3821	.3100	.1814	.0684
60	12.62	11.14	.3099	-.06	11.06	.2858	.3177	.1512	.0204
72	12.45	11.05	.2475	-.02	11.08	.2506	.3212	.1217	-.0043

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	12.26	-.95

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12.59	7.04	.1618	-.99	6.98
12.79	8.49	.2332	-.98	8.56
12.93	9.66	.2443	-.94	9.64
13.08	10.28	.2641	-.86	10.24
13.19	10.84	.2731	-.80	10.63
13.27	11.04	.2821	-.76	10.75

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD — MAY   Y = V(AT T)
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 11   XP = U(AT T + DT)
ALPHA ANGLE   — 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	15.79	12.68	.3133	−.66	12.65	930		14.50	−1.25

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	15.63	12.55	.8149	−.49	12.62	.7994	.3242	.3104	.2793	14.86	7.35	.1401	−1.32	7.57
24	15.49	12.52	.6729	−.30	12.59	.6459	.3344	.2898	.2126	15.12	9.38	.2245	−1.28	9.61
36	15.37	.?.53	.5473	−.26	12.58	.4982	.3435	.2526	.1724	15.33	10.61	.2526	−1.20	10.91
48	15.22	12.57	.4425	−.20	12.57	.3969	.3540	.2144	.1220	15.50	11.36	.2822	−1.11	11.57
60	15.09	12.51	.3375	−.09	12.57	.3184	.3637	.1913	.0778	15.64	11.92	.2947	−1.05	11.95
72	14.91	12.46	.2545	−.01	12.59	.2614	.3693	.1643	.0278	15.77	12.23	.3091	−.98	12.18

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD    - MAY                   Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 12                    XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                  YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
18.45	13.93	.3365	-1.11	13.86	930	16.89	-1.66

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	18.26	13.85	.8342	-.92	13.85	.8161	.3430	.3171	.3160	17.29	7.67	.1514	-1.76	7.99
24	18.09	13.84	.7047	-.80	13.79	.6722	.3547	.3023	.2626	17.59	9.88	.2204	-1.76	10.22
36	17.97	13.83	.5909	-.68	13.77	.5446	.3669	.2740	.2230	17.90	11.24	.2545	-1.71	11.57
48	17.85	13.88	.4903	-.60	13.76	.4494	.3780	.2406	.1713	17.99	12.14	.2894	-1.64	12.34
60	17.74	13.86	.3892	-.44	13.80	.3704	.3913	.2144	.1144	18.15	12.82	.3121	-1.59	12.83
72	17.54	13.79	.3049	-.36	13.83	.3156	.3982	.1949	.0591	18.72	13.24	.3280	-1.53	13.11

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - MAY   Y = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 13   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                        FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y		
	20.47	14.07	.3592	-2.26	13.67	930		18.98	-2.82		

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	20.31	14.03	.8622	-2.04	13.64	.8469	.3660	.3388	.3498	19.31	7.11	.1438	-2.95	7.26
24	20.13	14.02	.7344	-1.93	13.58	.7103	.3743	.3179	.3018	19.60	9.54	.2255	-2.94	9.59
36	20.00	14.01	.6276	-1.84	13.59	.5810	.3855	.2935	.2544	19.82	10.95	.2656	-2.88	11.08
48	19.83	14.06	.5240	-1.74	13.58	.4693	.3950	.2624	.1974	20.03	11.98	.3017	-2.80	12.02
60	19.77	14.04	.4236	-1.60	13.65	.3799	.4063	.2409	.1326	20.18	12.73	.3249	-2.75	12.58
72	19.62	13.99	.3433	-1.51	13.70	.3191	.4125	.2190	.0689	20.34	13.16	.3447	-2.68	12.89

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 14
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
20.05	12.37	.3922	-2.79	11.84	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
18.78	-3.15

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	19.89	12.33	.8582	-2.63	11.76	.8426	.3956	.3950	.3606	19.09	6.35	.1341	-3.30	6.33
24	19.71	12.33	.7515	-2.53	11.70	.7106	.3956	.3613	.3046	19.34	8.16	.2514	-3.30	8.27
36	19.54	12.33	.6276	-2.45	11.70	.5620	.4051	.3288	.2366	19.58	9.63	.3055	-3.24	9.70
48	19.34	12.28	.5182	-2.38	11.70	.4416	.4171	.2836	.1542	19.80	10.55	.3550	-3.16	10.54
60	19.23	12.24	.4107	-2.32	11.74	.3561	.4271	.2501	.0871	19.93	11.22	.3761	-3.10	10.99
72	19.05	12.16	.3275	-2.27	11.76	.2943	.4332	.2274	.0178	20.08	11.57	.3918	-3.03	11.24

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 15
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	16.85	10.07	.4204	-3.20	9.42	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	16.71	10.03	.8588	-3.14	9.41	.8317	.4222	.4501	.3550
24	16.54	10.02	.7490	-3.06	9.39	.7075	.4240	.4265	.2784
36	16.39	9.99	.6376	-3.01	9.39	.5575	.4306	.3933	.2080
48	16.22	9.98	.5357	-2.95	9.38	.4353	.4376	.3445	.1350
60	16.07	9.94	.4331	-2.91	9.38	.3364	.4457	.3022	.0803
72	15.89	9.86	.3556	-2.88	9.38	.2709	.4513	.2594	.0283

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	15.87	-3.55

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
16.13	5.16	.1427	-3.61	5.13
16.36	6.66	.2753	-3.61	6.53
16.55	7.72	.3231	-3.55	7.66
16.72	8.43	.3661	-3.48	8.33
16.85	8.99	.3846	-3.40	8.73
16.96	9.30	.3993	-3.33	8.94

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869)   – CAPE KENNEDY
MONTH OF RECORD   – MAY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 16
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
12.60	8.24	.3767	-3.11	7.39	930	11.89	-3.47

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	12.46	8.21	.8367	-3.04	7.33	.8253	.3818	.4438	.2996	12.13	4.51	.0688	-3.52	4.04
24	12.33	8.20	.7526	-3.00	7.31	.6989	.3844	.4419	.2289	12.30	5.40	.1804	-3.48	5.10
36	12.19	8.19	.6425	-2.95	7.30	.5530	.3858	.4214	.1599	12.46	6.27	.2399	-3.42	5.92
48	12.05	8.17	.5472	-2.94	7.29	.4273	.3892	.3692	.1040	12.58	6.83	.2905	-3.3C	6.48
60	11.87	8.12	.4729	-2.90	7.29	.3110	.3956	.3202	.0737	12.70	7.19	.3096	-3.23	6.84
72	11.68	8.04	.4204	-2.87	7.26	.2387	.4059	.2793	.0329	12.82	7.38	.3292	-3.16	7.02

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 17
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
7.80	6.74	.3549	-2.88	5.90	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	7.67	6.71	.7959	-2.85	5.88	.7368	.3563	.4325	.2574
24	7.55	6.68	.7487	-2.85	5.86	.6547	.3575	.4563	.2307
36	7.43	6.66	.6215	-2.81	5.85	.4897	.3586	.4355	.1644
48	7.28	6.64	.5563	-2.82	5.86	.3746	.3590	.3764	.1340
60	7.14	6.61	.4752	-2.78	5.84	.2658	.3696	.3147	.0715
72	6.99	6.54	.4156	-2.78	5.81	.1881	.3780	.2836	.0298

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
7.42	-3.10

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
7.60	4.08	.0714	-3.09	3.84
7.71	4.46	.0717	-3.05	4.23
7.82	5.26	.1652	-3.00	4.87
7.91	5.58	.2219	-2.93	5.25
7.93	5.88	.2736	-2.88	5.52
8.07	6.06	.2900	-2.82	5.63

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MAY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 18
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.34	5.66	.2733	-2.35	4.57	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	3.24	5.59	.7169	-2.34	4.54	.6422	.2677	.3564	.2097
24	3.11	5.57	.7205	-2.32	4.54	.6273	.2637	.3897	.1571
36	3.03	5.55	.5786	-2.30	4.55	.4217	.2642	.3854	.1193
48	2.93	5.54	.5310	-2.28	4.56	.3701	.2594	.3525	.0401
60	2.82	5.54	.4272	-2.25	4.55	.2435	.2571	.3321	.0265
72	2.65	5.47	.3778	-2.23	4.54	.2012	.2685	.2731	-.0448

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X		GIVEN Y	
	3.14		-2.50	

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.26	3.95	.0141	-2.46	3.39
3.37	3.92	.0215	-2.44	3.39
3.42	4.61	.0880	-2.39	3.93
3.49	4.76	.1538	-2.36	4.07
3.52	5.10	.1740	-2.31	4.24
3.60	5.17	.2186	-2.29	4.35

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - MAY   Y = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 19   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-.23	4.69	.1905	-1.61	3.56	930	-.28	-1.60

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.32	4.64	.6889	-1.61	3.55	.3852	.1786	.2668	.1698	-.20	3.39	-.0148	-1.60	3.21
24	-.41	4.62	.7182	-1.60	3.57	.5347	.1837	.3203	.0986	-.14	3.26	-.0410	-1.59	2.90
36	-.51	4.60	.5841	-1.60	3.59	.2575	.1812	.3115	.0784	-.09	3.81	.0195	-1.57	3.30
48	-.60	4.57	.5465	-1.59	3.58	.3050	.1840	.2978	.0260	-.05	3.91	.0613	-1.55	3.28
60	-.70	4.57	.4294	-1.58	3.58	.1415	.1844	.2590	.0240	-.04	4.23	.0977	-1.54	3.42
72	-.66	4.48	.4125	-1.56	3.56	.1496	.1999	.2367	-.0677	.05	4.21	.1255	-1.52	3.44

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY		X = U(AT T)	
MONTH OF RECORD — MAY		Y = V(AT T)	
PERIOD OF RECORD — 1/56 – 12/70			
ALTITUDE (KM) — 20		XP = U(AT T + DT)	
ALPHA ANGLE — 90.0		YP = V(AT T + DT)	

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP · CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	-2.64	4.28	.1699	-1.22	2.90	930		-2.58	-1.25

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-2.72	4.23	.6512	-1.22	2.90	.1532	.1651	.1180	.0845	-2.55	3.25	.1289	-1.22	2.85
24	-2.81	4.22	.6952	-1.21	2.91	.4429	.1687	.1924	.0600	-2.47	3.07	.0948	-1.22	2.58
36	-2.90	4.21	.5616	-1.20	2.91	.0433	.1608	.1415	.0090	-2.45	3.53	.1131	-1.20	2.87
48	-3.00	4.21	.5377	-1.20	2.91	.2417	.1689	.1750	-.0175	-2.40	3.58	.1238	-1.19	2.79
60	-3.13	4.20	.4267	-1.21	2.89	-.0597	.1660	.1083	-.0571	-2.39	3.83	.1279	-1.18	2.87
72	-3.25	4.18	.4056	-1.20	2.89	.0648	.1677	.1224	-.0460	-2.34	3.88	.1396	-1.17	2.88

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – MAY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 21
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-4.49	4.11	.0413	-.75	2.59	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-4.59	4.06	.6132	-.78	2.60	.0752	.0312	.0189	.0966
24	-4.70	4.07	.6765	-.76	2.61	.3092	.0315	.0859	.0061
36	-4.78	4.06	.5078	-.76	2.61	-.0330	.0290	.0413	.0685
48	-4.90	4.08	.5456	-.75	2.60	.0925	.0295	.0923	.0301
60	-4.99	4.07	.4194	-.75	2.58	-.1009	.0265	.0473	.0311
72	-5.13	4.06	.4235	-.74	2.56	-.0042	.0315	.0571	.0094

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-4.41	-.74

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-4.38	3.23	.0306	-.75	2.58
-4.30	3.02	-.0173	-.73	2.45
-4.30	3.53	.0258	-.74	2.58
-4.23	3.44	-.0124	-.72	2.56
-4.25	3.73	.0261	-.73	2.57
-4.19	3.72	.0189	-.72	2.58

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)   - CAPE KENNEDY           X  = U(AT T)
MONTH OF RECORD   - MAY                    Y  = V(AT T)
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     - 22                     XP = U(AT T + DT)
ALPHA ANGLE       - 90.0                   YP = V(AT T + DT)
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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	-5.71	4.20	-.0480	-.65	2.66	930	-5.62	-.68

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-5.83	4.18	.6486	-.68	2.66	.0657	-.0533	-.0120	.0465	-5.57	3.18	-.0602	-.65	2.66
24	-5.93	4.18	.6843	-.65	2.68	.3093	-.0650	-.0074	-.0540	-5.49	3.07	-.0576	-.65	2.53
36	-5.03	4.16	.5512	-.70	2.69	-.0637	-.0589	.0014	.0469	-5.47	3.49	-.0527	-.65	2.66
48	-6.14	4.17	.5285	-.68	2.69	.0421	-.0611	.0582	-.0398	-5.43	3.57	-.0926	-.63	2.65
60	-6.22	4.16	.4491	-.71	2.67	-.1348	-.0634	.0695	.0011	-5.43	3.75	-.0853	-.63	2.63
72	-6.32	4.15	.4395	-.67	2.67	.0166	-.0664	.0639	-.0484	-5.40	3.78	-.0844	-.62	2.66

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY        X  = U(AT T)
MONTH OF RECORD    - MAY                 Y  = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)      - 23                  XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	-6.54	4.22	-.0367	-.48	2.65	930		-6.44	-.48

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-6.66	4.20	.6911	-.50	2.66	.0662	-.0352	-.0480	.0524		-6.39	3.03	-.0117	-.48	2.64
24	-6.74	4.18	.6973	-.48	2.67	.2950	-.0436	-.0619	-.0275		-6.33	3.02	.0083	-.49	2.53
36	-6.86	4.17	.5935	-.50	2.69	-.1412	-.0444	-.0481	.0280		-6.29	3.38	-.0004	-.49	2.62
48	-6.97	4.16	.5854	-.50	2.70	.0610	-.0571	-.0692	-.0322		-6.23	3.42	.0047	-.50	2.64
60	-7.09	4.13	.5007	-.52	2.71	-.1895	-.0592	-.0275	-.0188		-6.21	3.65	-.0245	-.50	2.60
72	-7.18	4.14	.4629	-.48	2.71	.0405	-.0674	-.0212	-.0506		-6.20	3.74	-.0295	-.49	2.65

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — MAY
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM)   — 24
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-7.05	4.56	.0248	-.46	2.77	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-6.84	-.45

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-7.16	4.50	.7018	-.49	2.76	.0639	.0200	-.0158	.0677	-6.82	3.24	.0457	-.48	2.76
24	-7.26	4.48	.7126	-.49	2.77	.2963	.0093	-.0244	.0538	-6.74	3.19	.0422	-.47	2.64
36	-7.38	4.43	.5939	-.48	2.78	-.0831	.0032	-.0374	.0619	-6.72	3.66	.0550	-.49	2.76
48	-7.47	4.42	.5604	-.50	2.76	.0701	-.0024	-.0816	.0189	-6.68	3.78	.0840	-.51	2.75
60	-7.59	4.40	.4754	-.51	2.77	-.2039	-.0052	-.0879	.0175	-6.68	4.01	.0824	-.53	2.70
72	-7.66	4.37	.4745	-.52	2.75	.0110	-.0155	-.0564	-.0226	-6.64	4.01	.0588	-.51	2.76

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — MAY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 25
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-7.20	5.02	.0060	-.63	2.82	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-7.11	-.61

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-7.32	4.97	.7294	-.62	2.81	.1947	.0028	-.0202	.0595	-7.04	3.42	.0142	-.63	2.76
24	-7.43	4.94	.7273	-.63	2.82	.2558	-.0067	-.0387	.0580	-6.96	3.43	.0274	-.63	2.72
36	-7.53	4.90	.6218	-.62	2.84	-.0276	-.0121	-.0734	.0612	-6.93	3.92	.0689	-.65	2.81
48	-7.64	4.87	.5762	-.63	2.83	.0339	-.0067	-.0752	.0085	-6.88	4.10	.0600	-.65	2.81
60	-7.74	4.84	.5102	-.63	2.83	-.1407	-.0031	-.0941	.0346	-6.86	4.31	.0698	-.67	2.78
72	-7.85	4.79	.4727	-.66	2.81	.0048	-.0070	-.0670	.0007	-6.83	4.42	.0423	-.66	2.81

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL ST.ISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – MAY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 26
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-7.18	5.44	.0224	-.62	2.87	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-7.15	-.58

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-7.31	5.41	.7899	-.58	2.88	.3120	.0233	.0097	.0921	-7.05	3.31	-.0143	-.62	2.73
24	-7.43	5.39	.7528	-.59	2.88	.2347	.0218	-.0079	.0849	-6.97	3.56	.0192	-.62	2.79
36	-7.54	5.36	.6775	-.58	2.85	.0155	.0217	-.0422	.1046	-6.91	3.97	.0679	-.63	2.87
48	-7.64	5.34	.6130	-.61	2.83	-.0420	.0199	-.0452	.0915	-6.87	4.27	.0680	-.63	2.87
60	-7.73	5.31	.5637	-.60	2.84	-.1126	.0151	-.0434	.0523	-6.84	4.49	.0632	-.63	2.85
72	-7.87	5.26	.5058	-.61	2.82	.0156	.0113	-.0075	.0261	-6.80	4.69	.0300	-.62	2.87

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	– CAPE KENNEDY	X	= U(AT T)
MONTH OF RECORD	– MAY	Y	= V(AT T)
PERIOD OF RECORD	– 1/56 – 12/70		
ALTITUDE (KM)	– 27	XP	= U(AT T + DT)
ALPHA ANGLE	– 90.0	YP	= V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
-6.96	5.95	.0042	-.64	2.95	930		-6.87	-.64

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-7.06	5.92	.8226	-.62	2.95	.2551	.0055	-.0132	.0805	-6.80	3.36	-.0080	-.65	2.85
24	-7.18	5.89	.7803	-.61	2.94	.2544	.0111	-.0376	.0682	-6.72	3.71	.0306	-.66	2.85
36	-7.30	5.87	.6981	-.62	2.94	-.0165	.0177	-.0767	.1018	-6.66	4.23	.0834	-.66	2.94
48	-7.40	5.85	.6562	-.63	2.93	.0055	.0176	-.0850	.0615	-6.60	4.48	.0795	-.67	2.94
60	-7.50	5.83	.5877	-.65	2.92	-.0641	.0161	-.0854	.0231	-6.58	4.82	.0687	-.67	2.93
72	-7.62	5.82	.5359	-.66	2.90	-.0302	.0106	-.0797	.0123	-6.55	5.03	.0560	-.67	2.94

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) — CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5	1/56 - 12/70	0	90.0	-1.67	2.89	-.0657	.53	2.55	930
5	1/56 - 12/70	1	90.0	-.97	5.28	.1271	.94	4.25	930
5	1/56 - 12/70	2	90.0	.44	5.68	.2731	-.17	4.49	930
5	1/56 - 12/70	3	90.0	1.65	6.00	.2818	-.31	4.77	930
5	1/56 - 12/70	4	90.0	2.91	6.50	.2669	-.40	5.27	930
5	1/56 - 12/70	5	90.0	4.42	6.86	.2637	-.54	5.70	930
5	1/56 - 12/70	6	90.0	6.06	7.47	.2556	-.64	6.52	930
5	1/56 - 12/70	7	90.0	7.76	8.17	.2787	-.60	7.29	930
5	1/56 - 12/70	8	90.0	9.43	9.09	.2551	-.44	8.27	930
5	1/56 - 12/70	9	90.0	11.18	10.03	.2548	-.51	9.67	930
5	1/56 - 12/70	10	90.0	13.24	11.44	.2736	-.53	11.11	930
5	1/56 - 12/70	11	90.0	15.79	12.68	.3133	-.66	12.65	930
5	1/56 - 12/70	12	90.0	18.45	13.93	.3365	-1.11	13.86	930
5	1/56 - 12/70	13	90.0	20.47	14.07	.3592	-2.26	13.67	930
5	1/56 - 12/70	14	90.0	20.05	12.37	.3922	-2.79	11.84	930
5	1/56 - 12/70	15	90.0	16.85	10.07	.4204	-3.20	9.42	930
5	1/56 - 12/70	16	90.0	12.60	8.24	.3767	-3.1!	7.39	930
5	1/56 - 12/70	17	90.0	7.80	6.74	.3549	-2.88	5.90	930
5	1/56 - 12/70	18	90.0	3.34	5.66	.2733	-2.35	4.57	930
5	1/56 - 12/70	19	90.0	-.23	4.69	.1905	-1.61	3.56	930
5	1/56 - 12/70	20	90.0	-2.64	4.28	.1699	-1.22	2.90	930
5	1/56 - 12/70	21	90.0	-4.49	4.11	.0413	-.75	2.59	930
5	1/56 - 12/70	22	90.0	-5.71	4.20	-.0480	-.65	2.66	930
5	1/56 - 12/70	23	90.0	-6.54	4.22	-.0367	-.48	2.65	930
5	1/56 - 12/70	24	90.0	-7.05	4.56	.0248	-.48	2.77	930
5	1/56 - 12/70	25	90.0	-7.20	5.02	.0060	-.63	2.82	930
5	1/56 - 12/70	26	90.0	-7.18	5.44	.0224	-.62	2.87	930
5	1/56 - 12/70	27	90.0	-6.96	5.95	.0042	-.84	2.95	930

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD - JUNE	Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70	
ALTITUDE (KM) - 0	XP = U(AT T + DT)
ALPHA ANGLE - 90.0	YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
-1.08	2.68	.0014	.93	2.38	900	•	-1.10	.99

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-1.06	2.66	.2249	.93	2.38	.3801	-.0016	.1755	.0698	•	-1.08	2.60	-.0734	.95	2.16
24	-1.04	2.66	.4932	.92	2.38	.4272	-.0070	.0983	-.0961	•	-1.12	2.32	-.0096	.95	2.14
36	-1.03	2.66	.0288	.95	2.35	.1970	-.0195	.2472	.0414	•	-1.08	2.68	-.0150	.92	2.26
48	-.99	2.66	.3228	.97	2.34	.1729	-.0231	.1019	-.0533	•	-1.12	2.53	-.0254	.92	2.33
60	-.97	2.65	-.1119	.99	2.32	.0674	-.0231	.1767	.0433	•	-1.07	2.66	.0187	.91	2.34
72	-.95	2.64	.2567	1.01	2.31	.0568	-.0209	.0596	-.0476	•	-1.12	2.59	-.0119	.92	2.37

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – JUNE   Y = V(AT T)
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 1   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	.12	5.13	.1921	1.65	3.86	900	.22	1.83

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.14	5.12	.7015	1.66	3.87	.6583	.1863	.2528	.0084	.15	3.60	.1774	1.76	2.86
24	.19	5.11	.6094	1.68	3.87	.4657	.1796	.3055	-.0586	.11	3.97	.1166	1.72	3.30
36	.24	5.07	.3654	1.72	3.85	.2323	.1746	.2605	-.0985	.09	4.70	.1478	1.66	3.65
48	.29	5.07	.2566	1.73	3.83	.1325	.1658	.2477	-.0507	.08	4.86	.1410	1.64	3.72
60	.34	5.06	.1435	1.75	3.83	.0390	.1590	.1459	-.0822	.09	5.05	.1776	1.64	3.82
72	.38	5.05	.1428	1.73	3.81	.0409	.1582	.1522	-.0405	.09	5.07	.1757	1.63	3.81

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 2
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.27	5.04	.1908	.92	4.00	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	1.28	5.01	.7373	.96	4.01	.6148	.1846	.2734	.0501
24	1.29	5.01	.6182	.97	4.01	.4717	.1844	.2710	-.0361
36	1.31	4.99	.4248	.98	4.01	.2093	.1817	.2566	-.0432
48	1.31	5.00	.3222	.99	4.01	.1420	.1782	.2152	-.0674
60	1.33	4.98	.2206	.98	4.00	.0318	.1734	.1887	-.0623
72	1.34	4.98	.1597	.96	3.97	.0649	.1714	.1642	-.0724

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.38	1.17

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.32	3.38	.0765	1.06	3.08
1.29	3.88	.1337	1.03	3.44
1.27	4.52	.1195	.97	3.81
1.26	4.73	.1481	.95	3.88
1.26	4.89	.1565	.93	3.93
1.25	4.95	.1740	.94	3.94

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JUNE
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 3
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.87	5.05	.1333	.76	4.11	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	1.85	5.04	.7723	.77	4.12	.5907	.1343	.2278	.0201
24	1.85	5.04	.6354	.77	4.13	.4653	.1381	.2311	-.0631
36	1.84	5.04	.4600	.78	4.14	.2039	.1383	.2292	-.0581
48	1.83	5.06	.3625	.77	4.15	.1316	.1336	.2009	-.0559
60	1.83	5.05	.2424	.76	4.15	.0158	.1343	.1819	-.0551
72	1.83	5.06	.1693	.73	4.16	.0495	.1290	.1625	-.0701

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y		
	1.96	.95		

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.93	3.18	.0102	.87	3.26
1.91	3.82	.0807	.85	3.57
1.90	4.44	.0584	.81	3.94
1.89	4.67	.0794	.79	4.00
1.88	4.88	.0931	.77	4.04
1.86	4.95	.1120	.78	4.05

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X. Y. XP. YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 4
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
2.27	5.26	.1406	.59	4.25	900	2.38	.76

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	2.22	5.29	.7908	.57	4.28	.6304	.1481	.2263	.0416	2.38	3.20	.0167	.72	3.25
24	2.19	5.31	.6727	.57	4.28	.4870	.1502	.2360	-.0545	2.36	3.81	.0867	.70	3.65
36	2.15	5.33	.5069	.56	4.28	.2448	.1517	.2367	-.0504	2.36	4.49	.0592	.67	4.03
48	2.12	5.33	.4086	.56	4.29	.1699	.1510	.2144	-.0542	2.35	4.77	.0792	.66	4.11
60	2.10	5.33	.2867	.57	4.30	.0672	.1506	.1909	-.0330	2.33	5.03	.0949	.64	4.17
72	2.12	5.33	.1995	.54	4.32	.0748	.1493	.1607	-.0544	2.30	5.14	.1174	.63	4.19

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY ·
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 5
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2.56	5.57	.1087	.26	4.41	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
2.63	.42

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	2.51	5.58	.7852	.25	4.42	.6115	.1090	.2195	.0334	2.64	3.44	-.0681	.38	3.42
24	2.48	5.60	.6578	.26	4.42	.5104	.1112	.2271	-.0404	2.64	4.15	.0241	.36	3.72
36	2.43	5.61	.4993	.26	4.40	.2812	.1144	.2353	-.0484	2.64	4.79	.0228	.34	4.14
48	2.39	5.63	.3925	.28	4.42	.2172	.1126	.2075	-.0504	2.64	5.10	.0522	.33	4.23
60	2.37	5.63	.2951	.29	4.42	.1187	.1132	.2070	-.0413	2.63	5.31	.0591	.32	4.30
72	2.37	5.62	.2318	.27	4.44	.1155	.1128	.1819	-.0424	2.61	5.40	.0770	.31	4.32

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD - JUNE   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 6   XP = U(AT T + DT)
ALPHA ANGLE - 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2.91	5.92	.1681	-.13	4.71	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	2.84	5.92	.7849	-.15	4.70	.6688	.1681	.2605	.0812
24	2.79	5.93	.6521	-.14	4.71	.5079	.1673	.2674	-.0013
36	2.75	5.95	.5126	-.15	4.71	.3139	.1699	.2752	-.0034
48	2.67	5.97	.4194	-.14	4.72	.2334	1681	.2393	-.0207
60	2.61	5.96	.3080	-.14	4.75	.1359	.1665	.2374	-.0100
72	2.57	5.95	.2490	-.14	4.75	.1278	.1668	.2030	-.0151

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
2.90	-.02

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
2.95	3.65	-.0084	-.04	3.43
2.97	4.44	.0734	-.06	3.96
2.98	5.05	.0659	-.07	4.34
3.00	5.34	.1000	-.07	4.48
2.99	5.62	.1101	-.07	4.55
2.99	5.72	.1305	-.07	4.59

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD – JUNE
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 7
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.61	6.54	.2292	-.25	5.10	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
3.48	-.16

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	3.51	6.55	.7781	-.27	5.06	.6934	.2279	.2827	.1137	3.58	4.09	.1162	-.17	3.62
24	3.45	6.56	.6572	-.26	5.07	.5271	.2244	.3030	.0517	3.62	4.89	.1234	-.19	4.23
36	3.34	6.56	.5165	-.27	5.09	.3840	.2221	.2886	.0145	3.67	5.56	.1489	-.19	4.59
48	3.24	6.56	.4288	-.29	5.10	.2891	.2244	.2770	.0289	3.70	5.89	.1507	-.17	4.75
60	3.17	6.53	.3262	-.31	5.09	.1913	.2192	.2427	.0130	3.70	6.17	.1751	-.17	4.89
72	3.08	6.51	.2635	-.32	5.08	.1291	.2213	.2114	-.0134	3.71	6.29	.1919	-.17	4.97

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - JUNE   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 8   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP ● CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	4.26	7.32	.2449	-.29	5.77	900		3.88	-.25

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	4.15	7.29	.7972	-.31	5.76	.7105	.2435	.2894	.1482	4.04	4.40	.1089	-.28	4.00
24	4.07	7.31	.6805	-.30	5.76	.5688	.2405	.2940	.0974	4.13	5.34	.1357	-.29	4.66
36	3.95	7.33	.5435	-.33	5.78	.4248	.2388	.2867	.0594	4.22	6.12	.1563	-.27	5.11
48	3.82	7.32	.4731	-.36	5.79	.3210	.2385	.2706	.0710	4.29	6.44	.1574	-.25	5.35
60	3.71	7.31	.3539	-.41	5.75	.2230	.2382	.2392	.0516	4.32	6.84	.1858	-.24	5.52
72	3.60	7.28	.3130	-.41	5.72	.1591	.2420	.2098	.0498	4.35	6.95	.1976	-.23	5.61

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JUNE
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM)   — 9
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.20	8.50	.2755	-.29	6.84	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.68	-.31

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.06	8.47	.8027	-.32	6.82	.7344	.2761	.2889	.1925	4.89	5.06	.1604	-.31	4.60
24	4.93	8.50	.6926	-.34	6.80	.5878	.2737	.2792	.1606	5.03	6.13	.1742	-.30	5.47
36	4.77	8.51	.5786	-.37	6.82	.4386	.2769	.2599	.1203	5.14	6.93	.1951	-.28	6.07
48	4.65	8.51	.4981	-.40	6.83	.3541	.2799	.2502	.1215	5.21	7.37	.1957	-.26	6.31
60	4.51	8.48	.3869	-.45	6.77	.2679	.2815	.2079	.1054	5.27	7.84	.2228	-.24	6.52
72	4.38	8.47	.3449	-.48	6.74	.2138	.2817	.1852	.1082	5.31	7.98	.2307	-.23	6.62

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 10
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
5.94	9.81	.2893	-.45	8.26	900	5.28	-.50

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YF	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.79	9.78	.8202	-.48	8.22	.7204	.2848	.2745	.2220	5.52	5.61	.1629	-.50	5.70
24	5.61	9.78	.7220	-.49	8.17	.5703	.2846	.2785	.2014	5.70	6.78	.1607	-.50	6.71
36	5.46	9.77	.5968	-.54	8.15	.4396	.2790	.2529	.1573	5.83	7.86	.1993	-.46	7.33
48	5.34	9.74	.5253	-.54	8.11	.3722	.2809	.2431	.1542	5.91	8.36	.2044	-.45	7.57
60	5.16	9.74	.4329	-.59	8.04	.2832	.2809	.2031	.1383	5.99	8.84	.2302	-.42	7.85
72	5.02	9.73	.3930	-.64	8.01	.2230	.2808	.1943	.1446	6.05	9.01	.2330	-.40	7.97

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, Y₁

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD   - 1/55 - 12/70
ALTITUDE (KM)   - 11
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                    | FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	6.75	11.13	.3194	-.74	9.58	900		6.02	-.88

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	6.57	11.09	.8304	-.80	9.54	.7486	.3147	.3031	.2580	6.29	6.20	.1910	-.83	6.31
24	6.38	11.06	.7336	-.81	9.47	.6132	.3123	.2954	.2211	6.49	7.56	.2019	-.82	7.49
36	6.22	11.01	.6005	-.84	9.42	.4669	.3075	.2471	.1758	6.63	8.90	.2492	-.78	8.41
48	6.04	10.98	.5349	-.88	9.34	.3971	.2999	.2279	.1834	6.74	9.40	.2458	-.74	8.72
60	5.81	10.95	.4512	-.96	9.23	.3242	.2948	.1789	.1710	6.85	9.92	.2708	-.70	9.02
72	5.62	10.96	.4077	-1.04	9.17	.2705	.2885	.1640	.1744	6.92	10.14	.2650	-.66	9.16

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – JUNE
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 12
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP										CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N						GIVEN X	GIVEN Y		
	7.90	12.59	.3353	-1.60	10.92	900						7.14	-1.78		
DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	7.69	12.53	.8341	-1.70	10.83	.7823	.3282	.2956	.2922		7.44	6.94	.2153	-1.68	6.79
24	7.51	12.49	.7538	-1.71	10.78	.6672	.3245	.2905	.2594		7.62	8.27	.2195	-1.67	8.09
36	7.30	12.38	.6239	-1.73	10.70	.5157	.3191	.2484	.2388		7.80	9.64	.2637	-1.64	9.31
48	7.06	12.34	.5547	-1.80	10.60	.4515	.3083	.2396	.2134		7.95	10.46	.2509	-1.58	9.68
60	6.78	12.26	.4708	-1.93	10.43	.3631	.2978	.1898	.1977		8.08	11.08	.2775	-1.52	10.13
72	6.54	12.29	.4272	-2.04	10.37	.3251	.2929	.2093	.2063		8.17	11.33	.2634	-1.45	10.24

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — JUNE
PERIOD OF RECORD   — 1/56 — 12/70
ALTITUDE (KM)   — 13
ALPHA ANGLE   — 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8.72	13.28	.3392	-2.88	11.03	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	8.47	13.24	.8484	-2.98	10.93	.8054	.3316	.3146	.2985
24	8.26	13.26	.7773	-2.99	10.89	.6979	.3296	.3084	.2617
36	8.01	13.18	.6637	-3.02	10.80	.5624	.3232	.2781	.2137
48	7.73	13.16	.5945	-3.11	10.71	.4769	.3126	.2653	.2173
60	7.36	13.10	.5133	-3.23	10.54	.3804	.3033	.2120	.1936
72	7.05	13.12	.4704	-3.34	10.48	.3305	.2980	.2086	.2138

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
7.96	-3.03

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
8.29	7.02	.1881	-2.95	6.52
8.49	8.35	.2139	-2.93	7.85
8.69	9.93	.2526	-2.89	9.05
8.87	10.67	.2398	-2.83	9.60
9.04	11.38	.2756	-2.76	10.14
9.17	11.67	.2664	-2.69	10.34

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JUNE
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 14
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
7.79	12.41	.3262	-4.21	9.48	900	7.01	-4.33

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	7.52	12.40	.8780	-4.28	9.41	.7861	.3174	.3254	.2945	7.35	5.94	.0973	-4.28	5.81
24	7.30	12.45	.8196	-4.32	9.39	.7029	.3182	.3162	.2627	7.56	7.11	.1631	-4.24	6.68
36	7.05	12.43	.7163	-4.33	9.31	.5575	.3088	.2913	.1997	7.76	8.66	.2158	-4.21	7.78
48	6.77	12.45	.6587	-4.38	9.20	.4502	.2996	.2712	.1972	7.95	9.34	.2226	-4.16	8.35
60	6.40	12.43	.5668	-4.45	9.10	.3718	.2871	.2421	.1739	8.13	10.22	.2452	-4.10	8.69
72	6.08	12.46	.5228	-4.53	9.04	.3026	.2791	.2248	.1686	8.27	10.57	.2527	-4.05	8.93

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JUNE
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 15
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.30	10.32	.2622	-5.01	7.18	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.54	-5.15

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.05	10.30	.8796	-5.02	7.12	.7661	.2602	.2814	.2085	4.86	4.90	.0987	-5.14	4.57
24	4.82	10.32	.8290	-5.06	7.06	.6653	.2535	.2952	.1635	5.08	5.75	.1148	-5.10	5.28
36	4.58	10.31	.7328	-5.04	7.01	.5309	.2406	.2623	.1246	5.29	7.00	.1687	-5.07	6.00
48	4.32	10.31	.6751	-5.09	6.94	.4424	.2270	.2555	.1168	5.46	7.60	.1608	-5.01	6.34
60	4.04	10.24	.5903	-5.09	6.89	.3708	.2188	.2293	.0935	5.61	8.32	.1880	-4.98	6.58
72	3.75	10.26	.5327	-5.17	6.84	.3111	.2077	.2115	.0867	5.73	8.73	.1968	-4.92	6.74

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 16
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	1.95	7.55	.2393	-4.20	5.28	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	1.73	7.50	.8414	-4.20	5.24	.6783	.2310	.2712	.1854
24	1.52	7.47	.8047	-4.19	5.21	.6335	.2243	.2796	.1226
36	1.31	7.47	.7055	-4.20	5.13	.4791	.2131	.2680	.0816
48	1.06	7.44	.6514	-4.19	5.12	.4023	.2003	.2409	.0655
60	.86	7.41	.5735	-4.22	5.07	.3035	.1953	.2174	.0445
72	.63	7.36	.5259	-4.26	5.06	.2467	.1808	.1904	.0250

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	1.42	-4.31

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.69	4.08	.0430	-4.31	3.83
1.88	4.46	.1091	-4.29	4.02
2.04	5.32	.1327	-4.24	4.55
2.20	5.71	.1556	-4.21	4.76
2.29	6.16	.1734	-4.16	4.96
2.39	6.40	.1904	-4.13	5.06

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JUNE
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 17
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.15	5.58	.1917	-3.02	4.11	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-1.47	-3.09

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-1.33	5.52	.7553	-3.00	4.05	.5110	.1937	.2304	.1461	-1.26	3.66	.0319	-3.08	3.49
24	-1.49	5.51	.7600	-2.98	4.02	.5210	.1975	.2339	.1240	-1.12	3.62	.0490	-3.07	3.46
36	-1.65	5.49	.6487	-3.01	3.96	.3319	.1864	.2092	.0697	-1.02	4.24	.1012	-3.02	3.82
48	-1.81	5.49	.5942	-3.00	3.93	.3102	.1883	.1662	.0516	-.93	4.47	.1458	-3.02	3.88
60	-1.98	5.44	.5125	-3.02	3.88	.1998	.1664	.1353	.0358	-.87	4.78	.1573	-2.99	4.00
72	-2.15	5.41	.4623	-3.03	3.88	.2058	.1617	.0988	.0208	-.81	4.94	.1812	-3.00	4.01

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 18
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-4.21	4.44	.1154	-2.06	3.19	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-4.38	-2.18

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-4.37	4.40	.6394	-2.03	3.17	.2830	.1069	.1519	.1485	-4.24	3.40	-.0046	-2.10	3.03
24	-4.49	4.40	.6865	-2.03	3.12	.4280	.1090	.2023	.0707	-4.14	3.23	-.0338	-2.11	2.84
36	-4.65	4.34	.5506	-2.02	3.11	.1712	.1024	.1575	.0511	-4.06	3.71	.0362	-2.06	3.11
48	-4.77	4.33	.5403	-2.03	3.07	.2433	.0978	.1231	.0180	-3.99	3.73	.0703	-2.07	3.08
60	-4.88	4.29	.4364	-2.03	3.07	.0745	.0832	.0669	-.0216	-3.97	3.99	.1009	-2.05	3.17
72	-4.97	4.29	.4215	-2.04	3.06	.1057	.0312	.0789	-.0399	-3.94	4.02	.0999	-2.04	3.16

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 19
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-6.68	3.78	.1341	-1.22	2.75	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-6.73	-1.26

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-6.80	3.75	.5528	-1.20	2.72	.1100	.1279	.0501	.0923	-6.64	3.15	.1258	-1.23	2.73
24	-6.93	3.74	.6430	-1.19	2.68	.3898	.1310	.1960	.1067	-6.55	2.90	-.0003	-1.23	2.50
36	-7.04	3.72	.4777	-1.17	2.64	.0327	.1353	.0409	.0247	-6.52	3.32	.1320	-1.22	2.75
48	-7.14	3.70	.4778	-1.17	2.63	.2542	.1346	.1119	.0732	-6.48	3.32	.0926	-1.22	2.65
60	-7.24	3.67	.3460	-1.14	2.64	-.0128	.1305	-.0136	-.0375	-6.48	3.54	.1475	-1.23	2.75
72	-7.33	3.66	.3509	-1.15	2.62	.1855	.1283	.0545	.0194	-6.46	3.54	.1301	-1.23	2.70

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 20
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP |

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-8.64	3.87	.1176	-.93	2.56	900	-8.66	-.98

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-8.73	3.83	.3053	-.94	2.56	.0890	.1124	.0425	.0481	-8.62	3.69	.1091	-.94	2.55
24	-8.84	3.86	.6580	-.93	2.53	.2198	.1210	.1530	.1074	-8.52	2.91	.0154	-.93	2.48
36	-8.93	3.84	.2119	-.92	2.53	-.0165	.1168	.0018	-.0049	-8.58	3.78	.1195	-.93	2.56
48	-9.04	3.85	.5065	-.93	2.52	.0835	.1263	.0965	.0802	-8.45	3.34	.0789	-.92	2.55
60	-9.10	3.84	.1095	-.92	2.53	-.0770	.1265	-.0468	-.0465	-8.58	3.84	.1197	-.94	2.56
72	-9.21	3.85	.4066	-.94	2.53	.0628	.1261	.0414	.0403	-8.42	3.54	.1113	-.92	2.56

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JUNE
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 21
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-10.10	3.85	-.1068	-.57	2.63	900	-10.07	-.61

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-10.18	3.84	.2105	-.58	2.63	-.0813	-.1023	.1823	.2366	-10.08	3.63	-.1393	-.55	2.58
24	-10.29	3.90	.6318	-.58	2.63	.2946	-.0925	-.0668	-.0784	-9.96	2.99	-.0795	-.58	2.51
36	-10.37	3.88	.1683	-.58	2.63	-.1596	-.0966	.1389	.2032	-10.05	3.70	-.1039	-.54	2.58
48	-10.49	3.95	.5405	-.58	2.64	.1541	-.0973	-.0989	-.0961	-9.88	3.24	-.0558	-.59	2.59
60	-10.55	3.92	.0530	-.61	2.66	-.1459	-.0965	.1467	.1330	-10.07	3.81	-.0993	-.52	2.58
72	-10.63	3.95	.4297	-.63	2.68	.1560	-.1040	-.1069	-.1403	-9.87	3.46	-.0531	-.60	2.59

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY            X  = U(AT T)
MONTH OF RECORD    - JUNE                    Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 22                      XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                    YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						• CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP		

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
-11.43	3.65	-.1461	-.44	2.99	900	•	-11.41	-.44

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-11.51	3.64	.3965	-.45	2.98	-.2022	-.1407	.1072	.1934	-11.38	3.23	-.1636	-.44	2.92
24	-11.61	3.68	.5693	-.44	2.99	.3678	-.1474	-.1138	-.1033	-11.32	3.00	-.0974	-.45	2.78
36	-11.69	3.67	.3621	-.43	2.98	-.2471	-.1290	.1118	.1142	-11.32	3.35	-.1675	-.42	2.89
48	-11.80	3.69	.4725	-.40	3.02	.2642	-.1369	-.1007	-.1035	-11.25	3.22	-.1552	-.47	2.88
60	-11.91	3.70	.3019	-.41	3.02	-.2965	-.1186	.1270	.1247	-11.28	3.43	-.1552	-.40	2.94
72	-12.01	3.69	.4008	-.43	3.01	.2817	-.1232	-.1379	-.1295	-11.19	3.34	-.0796	-.50	2.85

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — JUNE
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 23
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-12.57	3.81	-.0813	-.43	2.96	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-12.54	-.40

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-12.67	3.82	.4819	-.43	2.95	-.1538	-.0702	-.0407	.0603	-12.50	3.32	-.0545	-.44	2.92
24	-12.77	3.83	.5647	-.43	2.95	.3439	-.0786	-.0075	.0268	-12.43	3.13	-.1317	-.41	2.77
36	-12.86	3.83	.4325	-.43	2.93	-.2049	-.0663	-.0309	.0159	-12.43	3.43	-.0666	-.44	2.89
48	-12.95	3.84	.4304	-.41	2.95	.3006	-.0733	-.0201	-.0030	-12.39	3.43	-.0944	-.42	2.82
60	-13.05	3.84	.3521	-.40	2.96	-.2538	-.0667	-.0141	-.0059	-12.39	3.56	-.0794	-.44	2.86
72	-13.14	3.83	.3938	-.41	2.96	.2002	-.0744	-.0091	-.0365	-12.33	3.50	-.0847	-.42	2.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD – JUNE   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 24   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-13.31	4.11	-.0422	-.42	2.71	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-13.44	4.13	.4895	-.43	2.71	-.0411	-.0320	-.0433	.0121
24	-13.53	4.13	.5847	-.44	2.71	.1554	-.0314	.0292	.0633
36	-13.64	4.13	.4429	-.45	2.69	-.1083	-.0330	-.0444	-.0240
48	-13.73	4.11	.4885	-.44	2.71	.0808	-.0408	.0781	.0595
60	-13.83	4.11	.3819	-.44	2.71	-.0823	-.0387	-.0401	-.0324
72	-13.95	4.11	.4482	-.43	2.73	.0557	-.0527	.0260	-.0059

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-13.27	-.42

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-13.23	3.58	-.0228	-.42	2.70
-13.16	3.32	-.0904	-.41	2.67
-13.15	3.69	-.0265	-.44	2.69
-13.08	3.57	-.1008	-.39	2.69
-13.10	3.80	-.0309	-.44	2.70
-13.00	3.68	-.0615	-.41	2.70

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD    - JUNE                  Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 25                    XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                  YP = V(AT T + DT)
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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						•	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y			
	-13.98	4.45	-.0665	-.57	2.64	900	•	-13.97	-.61			

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-14.11	4.47	.4963	-.59	2.63	.1405	-.0699	-.0109	.0150	•	-13.91	3.86	-.0793	-.57	2.62
24	-14.22	4.46	.5814	-.60	2.63	.1102	-.0849	.0294	.0277	•	-13.84	3.60	-.1147	-.57	2.62
36	-14.34	4.45	.4351	-.62	2.61	-.0040	-.0865	-.0077	-.0058	•	-13.82	4.01	-.0700	-.57	2.64
48	-14.45	4.40	.5101	-.61	2.60	-.0332	-.0947	.0247	.0022	•	-13.73	3.82	-.0903	-.56	2.64
60	-14.57	4.39	.3789	-.62	2.60	-.0365	-.0914	.0086	-.0195	•	-13.75	4.12	-.0748	-.57	2.64
72	-14.68	4.36	.4348	-.63	2.62	-.0304	-.0964	-.0135	.0243	•	-13.66	4.00	-.0651	-.58	2.64

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 26
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-14.34	4.69	-.0763	-.69	2.82	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-14.31	-.68

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-14.45	4.71	.5759	-.72	2.82	.0676	-.0871	-.0176	.0142	-14.25	3.82	-.0867	-.69	2.81
24	-14.55	4.79	.5943	-.70	2.82	.0560	-.0910	-.0397	-.0067	-14.20	3.77	-.0690	-.69	2.81
36	-14.68	4.81	.4934	-.70	2.83	.0022	-.0917	.0075	.0611	-14.16	4.05	-.0931	-.69	2.82
48	-14.79	4.77	.4825	-.71	2.84	.0459	-.0975	-.0759	-.0020	-14.11	4.11	-.0476	-.71	2.81
60	-14.93	4.74	.4304	-.74	2.83	-.0238	-.1006	-.0439	-.0022	-14.07	4.23	-.0625	-.71	2.81
72	-15.04	4.71	.4246	-.74	2.84	.0297	-.1030	-.0490	-.0278	-14.03	4.25	-.0619	-.71	2.81

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — JUNE
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 27
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-14.65	5.04	-.0857	-.85	2.88	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-14.58	-.83

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-14.80	5.03	.6345	-.86	2.87	.0502	-.0937	-.0519	.0194	-14.51	3.68	-.0735	-.85	2.88
24	-14.91	5.03	.6128	-.85	2.86	.1247	-.1030	-.0688	-.0342	-14.45	3.98	-.0600	-.86	2.86
36	-15.05	5.03	.5044	-.82	2.88	-.0380	-.1105	-.0540	.0305	-14.41	4.33	-.0637	-.86	2.89
48	-15.17	5.00	.4840	-.83	2.89	.0409	-.1080	-.0612	-.0224	-14.37	4.41	-.0655	-.87	2.88
60	-15.30	4.98	.4300	-.83	2.91	-.0068	-.1084	-.0390	.0122	-14.33	4.54	-.0758	-.87	2.88
72	-15.40	4.96	.4051	-.83	2.93	.0904	-.1097	-.0517	-.0595	-14.32	4.61	-.0697	-.87	2.87

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) – CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
6	1/56 – 12/70	0	90.0	−1.08	2.68	.0014	.93	2.38	900
6	1/56 – 12/70	1	90.0	.12	5.13	.1921	1.65	3.86	900
6	1/56 – 12/70	2	90.0	1.27	5.04	.1908	.92	4.00	900
6	1/56 – 12/70	3	90.0	1.87	5.05	.1333	.76	4.11	90.
6	1/56 – 12/70	4	90.0	2.27	5.26	.1406	.59	4.25	900
6	1/56 – 12/70	5	90.0	2.56	5.57	.1067	.26	4.41	900
6	1/56 – 12/70	6	90.0	2.91	5.92	.1681	−.13	4.71	900
6	1/56 – 12/70	7	90.0	3.61	6.54	.2292	−.25	5.10	900
6	1/56 – 12/70	8	90.0	4.26	7.32	.2449	−.29	5.77	900
6	1/56 – 12/70	9	90.0	5.20	8.50	.2755	−.29	6.84	900
6	1/56 – 12/70	10	90.0	5.94	9.81	.2893	−.45	8.26	900
6	1/56 – 12/70	11	90.0	6.75	11.13	.3194	−.74	9.58	900
6	1/56 – 12/70	12	90.0	7.90	12.59	.3353	−1.60	10.92	900
6	1/56 – 12/70	13	90.0	8.72	13.28	.3392	−2.88	11.13	900
6	1/56 – 12/70	14	90.0	7.79	12.41	.3262	−4.21	9.18	900
6	1/56 – 12/70	15	90.0	5.30	10.32	.2622	−5.01	7.13	900
6	1/56 – 12/70	16	90.0	1.95	7.55	.2393	−4.20	5.28	900
6	1/56 – 12/70	17	90.0	−1.15	5.58	.1917	−3.02	4.11	900
6	1/56 – 12/70	18	90.0	−4.21	4.44	.1154	−2.06	3.19	900
6	1/56 – 12/70	19	90.0	−6.68	3.78	.1341	−1.22	2.75	900
6	1/56 – 12/70	20	90.0	−8.64	3.87	.1176	−.93	2.56	900
6	1/56 – 12/70	21	90.0	−10.10	3.85	−.1068	−.57	2.63	900
6	1/56 – 12/70	22	90.0	−11.43	3.65	−.1461	−.44	2.99	900
6	1/56 – 12/70	23	90.0	−12.57	3.81	−.0813	−.43	2.96	900
6	1/56 – 12/70	24	90.0	−13.31	4.11	−.0422	−.42	2.71	900
6	1/56 – 12/70	25	90.0	−13.98	4.45	−.0665	−.57	2.64	900
6	1/56 – 12/70	26	90.0	−14.34	4.69	−.0763	−.69	2.82	900
6	1/56 – 12/70	27	90.0	−14.65	5.04	−.0857	−.85	2.88	900

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JULY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 0
ALPHA ANGLE — 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.60	2.29	-.1376	1.48	1.84	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.58	2.27	.2129	1.50	1.84	.1849	-.1417	.1632	.1304
24	-.57	2.27	.4910	1.52	1.83	.2416	-.1372	-.0014	-.0592
36	-.55	2.24	.0890	1.50	1.84	.0568	-.1271	.1298	.0939
48	-.55	2.24	.2786	1.50	1.83	.0655	-.1249	-.0000	-.0438
60	-.53	2.24	-.0143	1.49	1.83	-.0414	-.1142	.0923	.0636
72	-.53	2.24	.2003	1.48	1.83	-.0257	-.1139	-.0734	-.0668

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-.62	1.63

	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
	-.58	2.21	-.2223	1.50	1.78
	-.62	2.00	-.1645	1.50	1.79
	-.59	2.27	-.1603	1.48	1.82
	-.62	2.20	-.1430	1.48	1.84
	-.59	2.23	-.1353	1.47	1.83
	-.63	2.24	-.1276	1.48	1.84

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858) — CAPE KENNEDY
MONTH OF RECORD — JULY
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 1
ALPHA ANGLE — 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.79	4.40	-.0129	2.73	3.31	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.86	4.40	.7755	2.75	3.28	.5690	-.0092	-.0248	-.0862
24	.91	4.41	.6908	2.76	3.27	.4757	-.0050	-.0270	-.0881
36	.94	4.42	.4902	2.76	3.27	.2407	-.0066	-.0779	-.1072
48	.96	4.42	.3699	2.77	3.27	.1623	.0069	-.1012	-.0982
60	.96	4.43	.2201	2.77	3.27	.0579	.0090	-.0936	-.0834
72	.94	4.43	.1540	2.77	3.27	.0694	.0157	-.0699	-.0527

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.84	2.84

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.76	2.76	.0996	2.78	2.72
.73	3.16	.0729	2.77	2.91
.72	3.81	.0600	2.75	3.20
.73	4.06	.0451	2.75	3.25
.75	4.27	.0131	2.74	3.29
.76	4.34	.0017	2.74	3.29

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 2
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	1.18	4.45	.0981	1.85	3.45	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	1.24	4.49	.7466	1.86	3.43	.5789	.1021	.1159	.0488
24	1.29	4.49	.6622	1.88	3.42	.4732	.1035	.0891	-.0153
36	1.32	4.49	.4747	1.90	3.42	.2357	.1031	.0041	-.0079
48	1.35	4.49	.3674	1.93	3.42	.1899	.1095	-.0427	-.0122
60	1.37	4.50	.2360	1.94	3.42	.0775	.1108	-.0442	.0094
72	1.37	4.49	.1728	1.96	3.43	.0539	.1148	-.0506	.0112

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	1.39	1.95

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.29	2.96	.0505	1.91	2.81
1.23	3.31	.1197	1.88	3.04
1.20	3.91	.1285	1.86	3.35
1.19	4.13	.1365	1.85	3.38
1.18	4.32	.1137	1.85	3.44
1.18	4.38	.1095	1.84	3.44

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 3
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.35	4.59	.1239	1.62	3.51	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.58	1.66

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	1.41	4.62	.7830	1.65	3.50	.6469	.1233	.1387	.0543	1.48	2.85	.0897	1.63	2.67
24	1.47	4.62	.6676	1.67	3.50	.4805	.1182	.0935	.0169	1.42	3.41	.1400	1.61	3.08
36	1.51	4.62	.4901	1.70	3.49	.2529	.1163	.0379	.0163	1.39	4.00	.1372	1.61	3.40
48	1.55	4.61	.3889	1.72	3.49	.1627	.1200	.0012	.0162	1.37	4.23	.1414	1.61	3.47
60	1.55	4.61	.2801	1.74	3.47	.0682	.1241	-.0291	.0041	1.36	4.41	.1404	1.61	3.50
72	1.55	4.60	.2080	1.77	3.46	.0468	.1343	-.0367	.0116	1.36	4.49	.1357	1.61	3.51

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 4
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.36	4.79	.1173	1.45	3.77	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.56	1.43

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	1.42	4.79	.7894	1.49	3.73	.6514	.1067	.1502	.0399	1.47	2.93	.0590	1.42	2.84
24	1.48	4.77	.6611	1.50	3.74	.4987	.1029	.1145	-.0015	1.42	3.58	.1174	1.42	3.26
36	1.52	4.74	.5065	1.54	3.72	.2912	.1009	.0825	-.0173	1.39	4.12	.1158	1.42	3.60
48	1.55	4.74	.3899	1.54	3.72	.1673	.1071	.0362	.0020	1.37	4.41	.1210	1.43	3.71
60	1.56	4.73	.2879	1.57	3.69	.0555	.1114	-.0054	.0118	1.36	4.59	.1256	1.44	3.76
72	1.55	4.73	.2198	1.58	3.67	.0210	.1213	-.0234	.0419	1.35	4.67	.1252	1.45	3.76

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 5
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.16	4.86	.0779	1.10	3.86	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.33	.99

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	1.22	4.89	.7782	1.13	3.84	.6300	.0788	.1107	.0007	1.26	3.04	.0613	1.02	2.99
24	1.26	4.85	.6694	1.12	3.82	.5142	.0770	.0970	-.0222	1.22	3.59	.0799	1.03	3.30
36	1.30	4.84	.4921	1.16	3.82	.2954	.0794	.0535	-.0381	1.20	4.21	.0896	1.05	3.68
48	1.32	4.82	.3977	1.15	3.81	.1811	.0850	.0096	-.0026	1.18	4.46	.0895	1.07	3.79
60	1.33	4.82	.2722	1.16	3.80	.0559	.0885	-.0339	.0289	1.16	4.68	.0905	1.09	3.85
72	1.32	4.84	.2107	1.17	3.79	.0231	.0973	-.0487	.0542	1.16	4.75	.0895	1.09	3.85

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 6
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.81	4.93	.0539	.76	4.14	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.85	.61

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.85	4.94	.7553	.76	4.13	.6090	.0547	.1044	-.0314		.82	3.21	.0370	.66	3.27
24	.88	4.91	.6335	.75	4.10	.5014	.0552	.0869	-.0331		.80	3.80	.0492	.68	3.58
36	.90	4.90	.4571	.78	4.10	.2814	.0608	.0455	-.0285		.80	4.37	.0574	.71	3.97
48	.94	4.88	.3613	.77	4.08	.1695	.0615	.0091	.0117		.78	4.60	.0570	.73	4.08
60	.96	4.90	.2677	.77	4.06	.0731	.0662	-.0359	.0375		.78	4.75	.0646	.75	4.13
72	.93	4.92	.2104	.77	4.06	.0367	.0733	-.0388	.0543		.79	4.81	.0620	.75	4.14

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – JULY   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 7   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.28	5.01	.0897	.37	4.36	930

GIVEN X .37   GIVEN Y .22

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.31	5.00	.7573	.36	4.36	.6417	.0874	.1544	.0232	.33	3.27	.0001	.28	3.31
24	.34	4.98	.6334	.35	4.33	.4948	.0864	.1323	.0044	.31	3.87	.0456	.31	3.77
36	.36	4.96	.4732	.33	4.34	.2901	.0918	.1105	.0151	.29	4.42	.0542	.34	4.15
48	.37	4.97	.3568	.34	4.31	.1862	.0889	.0466	.0361	.28	4.68	.0788	.35	4.28
60	.36	4.99	.2875	.34	4.30	.0809	.0936	.0023	.0460	.28	4.80	.0917	.36	4.34
72	.35	5.01	.2335	.31	4.29	.0484	.0999	-.0026	.0809	.28	4.87	.0903	.36	4.35

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 8
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.10	5.55	.1673	-.10	4.72	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.06	-.24

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.10	5.54	.7679	-.10	4.69	.6699	.1608	.2015	.0940	-.07	3.55	.0676	-.18	3.47
24	-.09	5.51	.6255	-.13	4.65	.5178	.1605	.1771	.0843	-.08	4.33	.0974	-.15	4.01
36	-.10	5.42	.4624	-.15	4.63	.3461	.1498	.1392	.0830	-.09	4.92	.1188	-.12	4.41
48	-.10	5.42	.3697	-.13	4.60	.2155	.1494	.0736	.0847	-.09	5.15	.1478	-.12	4.60
60	-.12	5.42	.2957	-.13	4.57	.1314	.1501	.0506	.0941	-.09	5.29	.1545	-.11	4.68
72	-.13	5.43	.2398	-.18	4.58	.0808	.1532	.0278	.0842	-.09	5.38	.1624	-.10	4.70

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — JULY
PERIOD OF RECORD   — 1/56 - 12/70
ALTITUDE (KM)   — 9
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.66	6.49	.2715	-.61	5.39	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X = -.04   GIVEN Y = -.84

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.66	6.45	.7758	-.62	5.37	.6999	.2649	.2776	.1862	-.17	4.09	.1549	-.71	3.82
24	-.63	6.41	.6198	-.66	5.32	.5132	.2614	.2373	.1631	-.29	5.09	.1853	-.65	4.59
36	-.63	6.32	.4663	-.67	5.28	.3301	.2478	.1984	.1439	-.39	5.73	.2059	-.60	5.05
48	-.65	6.30	.3700	-.67	5.23	.2091	.2424	.1496	.1188	-.44	6.02	.2338	-.59	5.24
60	-.69	6.29	.2905	-.68	5.20	.1332	.2415	.1022	.1107	-.48	6.20	.2509	-.59	5.33
72	-.71	6.27	.2312	-.73	5.21	.0949	.2370	.0673	.0707	-.50	6.31	.2632	-.60	5.36

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12668)   — CAPE KENNEDY
MONTH OF RECORD   — JULY
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM)   — 10
ALPHA ANGLE   — 30.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.01	7.44	.3200	-1.21	6.11	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-1.03	7.40	.7695	-1.21	6.08	.7146	.3182	.3344	.2327
24	-1.02	7.38	.6244	-1.26	6.04	.5359	.3135	.2730	.1888
36	-1.04	7.29	.4591	-1.29	5.99	.3471	.3044	.2277	.1280
48	-1.09	7.28	.3723	-1.29	5.97	.2381	.2970	.1766	.0955
60	-1.14	7.25	.2586	-1.34	5.95	.1475	.2948	.1195	.0604
72	-1.19	7.21	.2008	-1.41	5.98	.0948	.2696	.0683	.0329

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y	
	-1.09	-1.49	

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-1.06	4.75	.1609	-1.40	4.22
-1.06	5.81	.2341	-1.33	5.11
-1.03	6.61	.2655	-1.27	5.67
-1.01	6.90	.2874	-1.25	5.89
-1.00	7.18	.3030	-1.22	6.02
-.99	7.28	.3166	-1.21	6.07

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 11
ALPHA ANGLE   – 90.0

X = U(A⁺ T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.47	8.67	.3326	-1.92	6.80	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-1.53	-2.24

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-1.55	8.66	.7668	-1.92	6.75	.7093	.3195	.3349	.2643	-1.46	5.56	.1409	-2.13	4.73
24	-1.58	8.66	.6360	-1.98	6.72	.5387	.3158	.2907	.2080	-1.44	6.69	.2243	-2.04	5.66
36	-1.60	8.58	.4517	-2.02	6.65	.3354	.3044	.2339	.1409	-1.44	7.73	.2718	-1.97	6.33
48	-1.67	8.56	.3572	-2.02	6.63	.2237	.2992	.1930	.0902	-1.41	8.09	.2958	-1.94	6.56
60	-1.73	8.51	.2375	-2.06	6.63	.1167	.2895	.1116	.0519	-1.41	8.42	.3200	-1.92	6.73
72	-1.81	8.47	.1908	-2.13	6.63	.0819	.2884	.0664	.0059	-1.40	8.50	.3312	-1.91	6.77

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 12
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
-2.06	9.74	.3124	-2.84	7.43	930		-2.25	-3.18

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-2.17	9.75	.7805	-2.85	7.36	.7242	.3026	.3172	.2521	-2.13	6.09	.1265	-3.08	5.07
24	-2.24	9.73	.6432	-2.91	7.31	.5622	.2966	.2944	.1755	-2.06	7.46	.2097	-2.98	6.06
36	-2.29	9.68	.4517	-2.95	7.25	.3646	.2854	.2371	.1070	-2.03	8.69	.2589	-2.91	6.84
48	-2.35	9.65	.3471	-2.96	7.22	.2498	.2845	.1931	.0725	-2.01	9.13	.2789	-2.88	7.13
60	-2.43	9.58	.2313	-3.01	7.22	.1396	.2766	.1247	.0103	-2.00	9.46	.3025	-2.85	7.33
72	-2.52	9.53	.1871	-3.07	7.21	.0949	.2719	.0949	-.0181	-1.99	9.54	.3082	-2.83	7.38

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 13
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	-2.75	10.28	.2741	-3.99	7.84	930		-3.10	-4.48

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-2.84	10.24	.7837	-4.01	7.77	.7339	.2661	.3109	.2107	-2.96	6.38	.0696	-4.35	5.24
24	-2.88	10.20	.6570	-4.06	7.70	.5756	.2602	.2828	.1266	-2.87	7.73	.1849	-4.25	6.32
36	-2.92	10.13	.4610	-4.09	7.63	.3967	.2492	.2463	.0613	-2.80	9.10	.2241	-4.16	7.10
48	-2.98	10.08	.3476	-4.08	7.61	.2668	.2481	.1937	.0200	-2.76	9.61	.2489	-4.10	7.49
60	-3.04	10.02	.2320	-4.11	7.59	.1709	.2397	.1474	-.0196	-2.73	9.96	.2641	-4.05	7.68
72	-3.13	9.96	.1880	-4.16	7.57	.1263	.2342	.1158	-.0473	-2.79	10.05	.2711	-4.03	7.75

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — JULY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 14
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-3.41	8.93	.2518	-4.52	7.09	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-3.45	8.87	.7751	-4.55	7.03	.7319	.2397	.3047	.1829
24	-3.50	8.82	.6723	-4.57	6.96	.6091	.2352	.3041	.1078
36	-3.56	8.74	.4757	-4.59	6.93	.4311	.2314	.2757	.0344
48	-3.61	8.69	.3711	-4.62	6.91	.3304	.2307	.2315	.0018
60	-3.64	8.64	.2383	-4.64	6.88	.2273	.2222	.1898	-.0357
72	-3.73	8.56	.1924	-4.68	6.88	.1775	.2176	.1487	-.0533

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-3.78	-6.01

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-3.66	5.64	.0419	-5.59	4.74
-3.51	6.60	.1328	-5.39	5.50
-3.38	7.83	.1937	-5.12	6.27
-3.32	8.26	.2214	-4.96	6.60
-3.28	8.64	.2404	-4.81	6.83
-3.25	8.72	.2490	-4.73	6.94

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 15
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-4.34	6.57	.2673	-3.91	5.60	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X: -4.89 GIVEN Y: -4.23

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-4.38	6.50	.7587	-3.91	5.55	.6611	.2549	.3096	.1834	-4.73	4.28	.0805	-4.18	4.12
24	-4.42	6.46	.6803	-3.91	5.50	.6508	.2554	.3139	.1308	-4.65	4.80	.1470	-4.18	4.17
36	-4.43	6.41	.4840	-3.92	5.47	.4634	.2589	.3077	.0670	-4.55	5.73	.1886	-4.13	4.85
48	-4.48	6.41	.3985	-3.91	5.43	.4082	.2621	.2571	.0455	-4.49	6.01	.2264	-4.09	5.04
60	-4.53	6.41	.2736	-3.92	5.41	.2901	.2564	.2342	.0215	-4.42	6.31	.2378	-4.05	5.28
72	-4.60	6.38	.2196	-3.92	5.42	.2707	.2599	.1707	.0142	-4.39	6.40	.2576	-4.02	5.36

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 16
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-5.07	4.80	.2954	-2.84	4.23	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-5.08	4.76	.6557	-2.83	4.21	.5731	.2906	.3448	.2116
24	-5.10	4.76	.6178	-2.82	4.20	.6015	.2940	.3716	.1506
36	-5.12	4.73	.4313	-2.82	4.19	.4026	.2994	.3455	.1043
48	-5.13	4.73	.3571	-2.80	4.14	.3775	.3082	.3001	.0572
60	-5.15	4.75	.2638	-2.77	4.12	.2571	.3072	.2437	.0637
72	-5.18	4.76	.1953	-2.77	4.11	.2614	.3167	.2123	.0623

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-6.32	-2.95

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-5.88	3.62	.0970	-3.11	3.37
-5.83	3.77	.1361	-3.14	3.27
-5.60	4.33	.1938	-3.15	3.74
-5.51	4.48	.2427	-3.10	3.83
-5.38	4.63	.2559	-3.06	4.02
-5.29	4.71	.2709	-3.02	4.04

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 17
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-6.28	3.66	.2318	-1.98	3.36	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-6.30	3.67	.4790	-1.95	3.37	.3389	.2313	.2259	.2257
24	-6.31	3.66	.5610	-1.92	3.36	.4653	.2320	.2762	.1518
36	-6.32	3.67	.3552	-1.88	3.36	.2680	.2367	.1799	.1370
48	-6.33	3.69	.2938	-1.87	3.36	.3176	.2401	.1634	.0947
60	-6.35	3.69	.2179	-1.86	3.34	.1662	.2481	.1244	.0991
72	-6.36	3.67	.1391	-1.82	3.33	.2144	.2462	.0848	.0630

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-6.41	-2.08

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-6.35	3.19	.1099	-2.03	3.12
-6.34	3.03	.0942	-2.06	2.92
-6.33	3.42	.1740	-2.03	3.21
-6.31	3.50	.1959	-2.05	3.17
-6.31	3.57	.2069	-2.01	3.30
-6.30	3.63	.2215	-2.03	3.28

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD — JULY	Y = V(AT T)
PERIOD OF RECORD — 1/56 — 12/70	
ALTITUDE (KM) — 18	XP = U(AT T + DT)
ALPHA ANGLE — 90.0	YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-8.39	2.97	.0348	-1.16	2.87	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-8.41	2.97	.4317	-1.16	2.86	.0997	.0388	.0672	.1052
24	-8.41	2.96	.4910	-1.15	2.85	.3956	.0360	.1808	-.0309
36	-8.43	2.97	.3086	-1.13	2.89	.0600	.0436	.0677	.0371
48	-8.44	2.98	.2426	-1.14	2.88	.2035	.0516	.0992	-.0088
60	-8.48	2.99	.1944	-1.12	2.87	.0138	.0537	.0255	.0557
72	-8.49	2.98	.1485	-1.14	2.87	.1263	.0562	.0319	.0761

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-8.37	-1.19

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-8.38	2.67	-.0031	-1.16	2.85
-8.37	2.58	-.0446	-1.17	2.59
-8.37	2.82	.0133	-1.16	2.85
-8.37	2.88	.0159	-1.17	2.79
-8.37	2.91	.0299	-1.16	2.86
-8.38	2.93	.0221	-1.17	2.84

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 19
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-10.63	2.86	.1350	-.87	2.65	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-10.61	-.90

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-10.66	2.86	.2145	-.86	2.67	-.1195	.1318	-.1519	-.0681	-10.62	2.78	.1652	-.88	2.61
24	-10.70	2.87	.4298	-.88	2.68	.3899	.1455	.1987	.1481	-10.60	2.57	.0221	-.87	2.41
36	-10.72	2.89	.1840	-.89	2.71	-.1140	.1465	-.1130	-.0964	-10.61	2.80	.1497	-.88	2.62
48	-10.77	2.89	.2985	-.89	2.72	.2457	.1518	.1275	.1778	-10.59	2.71	.0726	-.86	2.56
60	-10.78	2.92	.0891	-.91	2.71	-.1502	.1544	-.0987	-.0764	-10.62	2.84	.1343	-.89	2.61
72	-10.82	2.92	.2406	-.91	2.71	.2280	.1610	.1340	.1414	-10.59	2.76	.0860	-.85	2.57

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 20
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-13.01	3.43	.0679	-.81	2.39	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-13.06	3.41	-.0588	-.80	2.39	.0237	.0736	-.0368	-.0184
24	-13.11	3.43	.5694	-.80	2.41	.1686	.0788	.0987	.0489
36	-13.14	3.42	-.0951	-.83	2.43	.0734	.0756	-.0772	-.0679
48	-13.17	3.44	.4631	-.81	2.43	.0566	.0771	.0799	.0496
60	-13.20	3.41	-.1315	-.81	2.43	-.0249	.0726	-.0936	-.0661
72	-13.23	3.43	.4173	-.79	2.42	.0285	.0730	.0483	.0372

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X		GIVEN Y	
	-13.01		-.82	

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-13.02	3.43	.0663	-.81	2.39
-12.96	2.82	.0137	-.81	2.35
-13.03	3.41	.0662	-.82	2.38
-12.94	3.04	.0343	-.80	2.38
-13.04	3.40	.0554	-.82	2.38
-12.92	3.12	.0524	-.80	2.39

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 21
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-14.94	3.51	-.2009	-.52	2.72	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-14.98	-.48

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-14.99	3.49	-.0258	-.52	2.72	-.0938	-.1918	.1620	.2278	-14.93	3.41	-.1900	-.52	2.68
24	-15.01	3.52	.5082	-.49	2.71	.2428	-.1971	-.1270	-.1200	-14.93	3.02	-.1584	-.52	2.63
36	-15.02	3.52	-.0836	-.50	2.72	-.1023	-.1966	.1704	.2403	-14.94	3.40	-.1789	-.51	2.68
48	-15.04	3.52	.3883	-.51	2.72	.1585	-.1958	-.1667	-.1337	-14.92	3.23	-.1430	-.52	2.66
60	-15.10	3.47	-.1105	-.49	2.71	-.1392	-.1863	.1622	.1767	-14.95	3.44	-.1718	-.51	2.67
72	-15.12	3.47	.3451	-.47	2.69	.1410	-.1851	-.1741	-.2018	-14.90	3.26	-.1379	-.54	2.66

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 22
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-16.42	3.27	-.1696	-.30	3.13	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-16.46	3.27	.2149	-.32	3.14	-.3139	-.1601	.1104	.1815
24	-16.51	3.29	.4052	-.31	3.13	.3770	-.1809	-.1040	-.0840
36	-16.54	3.30	.1677	-.31	3.15	-.2920	-.1785	.1232	.1316
48	-16.56	3.31	.2918	-.33	3.12	.2932	-.1830	-.1457	-.0863
60	-16.59	3.28	.0527	-.34	3.14	-.2700	-.1837	.1164	.1254
72	-16.62	3.30	.2325	-.33	3.14	.2870	-.1828	-.1475	-.1174

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-16.43	-.29

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-16.41	3.12	-.1416	-.31	2.96
-16.39	2.99	-.1460	-.29	2.89
-16.40	3.18	-.1567	-.30	2.98
-16.39	3.13	-.1298	-.30	2.97
-16.40	3.24	-.1484	-.30	3.00
-16.39	3.18	-.1246	-.31	2.98

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD – JULY	Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70	
ALTITUDE (KM) – 23	XP = U(AT T + DT)
ALPHA ANGLE – 90.0	YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-17.56	3.32	-.0141	-.23	3.09	930

GIVEN X: -17.53   GIVEN Y: -.26

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
										-17.54	3.07	-.0050	-.23	3.02
12	-17.60	3.33	.3794	-.23	3.08	-.2177	-.0042	-.0159	.0146	-17.52	3.02	-.0381	-.24	2.97
24	-17.64	3.30	.4131	-.21	3.10	.2722	-.0166	.0350	.0104	-17.52	3.16	.0083	-.23	2.99
36	-17.67	3.31	.3026	-.23	3.16	-.2486	-.0215	-.0318	.0424	-17.51	3.14	-.0110	-.24	2.96
48	-17.70	3.30	.3272	-.24	3.14	.2971	-.0253	-.0282	.0094	-17.52	3.24	-.0201	-.23	3.02
60	-17.73	3.29	.2189	-.25	3.13	-.2080	-.0134	.0059	-.0207	-17.52	3.25	-.0227	-.23	2.99
72	-17.77	3.26	.1967	-.26	3.12	.2569	-.0268	.0180	.0097					

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	– CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD	– JULY	Y = V(AT T)
PERIOD OF RECORD	– 1/56 – 12/70	
ALTITUDE (KM)	– 24	XP = U(AT T + DT)
ALPHA ANGLE	– 90.0	YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-18.66	3.50	-.0258	-.27	2.81	930	-18.62	-.31

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-18.71	3.50	.3254	-.25	2.79	-.0803	-.0206	-.0688	-.0360	-18.63	3.31	-.0062	-.27	2.79
24	-18.76	3.48	.3713	-.23	2.79	.1767	-.0225	-.0343	.0502	-18.62	3.24	-.0257	-.29	2.76
36	-18.80	3.48	.2828	-.25	2.87	-.0546	-.0313	-.0846	-.0184	-18.61	3.36	-.0026	-.28	2.79
48	-18.85	3.45	.2942	-.26	2.85	.2032	-.0327	.0040	.0831	-18.60	3.33	-.0492	-.28	2.75
60	-18.90	3.44	.1489	-.28	2.85	-.0773	-.0232	-.0757	-.0153	-18.62	3.46	-.0158	-.28	2.79
72	-18.94	3.40	.1996	-.29	2.84	.1182	-.0275	.0547	.0682	-18.60	3.42	-.0470	-.26	2.78

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JULY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 25
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-19.44	3.82	.0182	-.52	2.70	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-19.40	-.58

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-19.48	3.81	.3587	-.52	2.71	.0482	.0211	-.0564	-.0735	-19.40	3.55	.0458	-.53	2.69
24	-19.53	3.79	.4465	-.53	2.69	.0821	.0240	-.0159	.0748	-19.38	3.41	.0226	-.52	2.69
36	-19.58	3.78	.2738	-.53	2.78	.0285	.0179	-.1253	.0446	-19.39	3.67	.0539	-.54	2.67
48	-19.63	3.75	.3476	-.56	2.78	.0817	.0159	-.0090	.1227	-19.36	3.56	.0127	-.52	2.69
60	-19.69	3.73	.1908	-.56	2.79	.0063	.0220	-.0445	.0468	-19.38	3.75	.0270	-.53	2.69
72	-19.75	3.70	.2573	-.54	2.78	.0427	.0306	.0304	.0501	-19.35	3.69	.0090	-.51	2.69

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 26
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-20.08	4.35	-.0864	-.60	2.68	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-19.98	-.66

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-20.11	4.35	.4633	-.60	2.38	.0545	-.0808	-.0188	-.0161	-20.02	3.85	-.0891	-.61	2.88
24	-20.18	4.23	.4990	-.64	2.89	.0611	-.0821	-.0143	.0367	-19.98	3.76	-.0974	-.61	2.87
36	-20.23	4.22	.3115	-.65	2.92	.0600	-.0848	-.0361	.0720	-20.00	4.11	-.0857	-.61	2.87
48	-20.30	4.18	.3289	-.64	2.91	.0203	-.0797	-.0375	.0992	-19.98	4.07	-.0815	-.61	2.88
60	-20.35	4.16	.2101	-.61	2.91	-.0186	-.0735	.0329	.0911	-20.01	4.23	-.0942	-.60	2.88
72	-20.39	4.15	.2457	-.61	2.90	-.0504	-.0719	.0056	.0413	-19.98	4.21	-.0877	-.60	2.88

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — JULY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 27
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	-20.49	4.70	-.0384	-.80	3.09	930	-20.34	-.81

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-20.56	4.67	.4867	-.81	3.05	.1320	-.0337	.0642	.0410	-20.38	4.10	-.0898	-.79	3.06
24	-20.62	4.56	.4721	-.85	3.09	.0500	-.0332	.0082	.0728	-20.35	4.13	-.0540	-.80	3.09
36	-20.68	4.65	.3324	-.87	3.12	-.0246	-.0371	.0368	.1352	-20.36	4.38	-.0507	-.80	3.09
48	-20.70	4.62	.3285	-.86	3.12	.1351	-.0382	-.0528	.0960	-20.36	4.41	-.0383	-.81	3.06
60	-20.74	4.60	.2403	-.84	3.11	-.0134	-.0339	.0275	.0912	-20.39	4.54	-.0454	-.80	3.09
72	-20.79	4.57	.2553	-.85	3.10	.0162	-.0317	.0197	.0208	-20.37	4.55	-.0455	-.80	3.09

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) – CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
7	1/56 – 12/70	0	90.0	-.60	2.29	-.1376	1.48	1.84	930
7	1/56 – 12/70	1	90.0	.79	4.40	-.0129	2.73	3.31	930
7	1/56 – 12/70	2	90.0	1.18	4.45	.0991	1.85	3.45	930
7	1/56 – 12/70	3	90.0	1.35	4.59	.1239	1.62	3.51	930
7	1/56 – 12/70	4	90.0	1.36	4.79	.1173	1.45	3.77	930
7	1/56 – 12/70	5	99.0	1.16	4.86	.0779	1.10	3.86	930
7	1/56 – 12/70	6	90.0	.81	4.93	.0539	.76	4.14	930
7	1/56 – 12/70	7	90.0	.28	5.01	.0897	.37	4.36	930
7	1/56 – 12/70	8	90.0	-.10	5.55	.1673	-.10	4.72	930
7	1/56 – 12/70	9	90.0	-.66	6.49	.2715	-.61	5.39	930
7	1/56 – 12/70	10	90.0	-1.01	7.44	.3200	-1.21	6.11	930
7	1/56 – 12/70	11	90.0	-1.47	8.67	.3326	-1.92	6.80	930
7	1/56 – 12/70	12	90.0	-2.06	9.74	.3124	-2.84	7.43	930
7	1/56 – 12/70	13	90.0	-2.75	10.28	.2741	-3.99	7.84	930
7	1/56 – 12/70	14	90.0	-3.41	8.93	.2518	-4.52	7.09	930
7	1/56 – 12/70	15	90.0	-4.34	6.57	.2673	-3.91	5.60	930
7	1/56 – 12/70	16	90.0	-5.07	4.80	.2954	-2.84	4.23	930
7	1/56 – 12/70	17	90.0	-6.28	3.66	.2318	-1.98	3.36	930
7	1/56 – 12/70	18	90.0	-8.39	2.97	.0348	-1.16	2.87	930
7	1/56 – 12/70	19	90.0	-10.63	2.86	.1350	-.87	2.65	930
7	1/56 – 12/70	20	90.0	-13.01	3.43	.0679	-.81	2.39	930
7	1/56 – 12/70	21	90.0	-14.94	3.51	-.2009	-.52	2.72	930
7	1/56 – 12/70	22	90.0	-16.42	3.27	-.1696	-.30	3.13	930
7	1/56 – 12/70	23	90.0	-17.56	3.32	-.0141	-.23	3.09	930
7	1/56 – 12/70	24	90.0	-18.66	3.50	-.0258	-.27	2.81	930
7	1/56 – 12/70	25	90.0	-19.44	3.82	.0182	-.52	2.70	930
7	1/56 – 12/70	26	90.0	-20.08	4.35	-.0864	-.60	2.88	930
7	1/56 – 12/70	27	90.0	-20.49	4.70	-.0384	-.80	3.09	930

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869)   — CAPE KENNEDY
MONTH OF RECORD   — AUGUST
PERIOD OF RECORD   — 1/56 - 12/70
ALTITUDE (KM)   — 0
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.58	2.14	.0388	.69	1.99	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.57	.66

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.60	2.15	.2223	.66	1.99	.4280	.0401	.1783	.0837	-.58	2.08	-.0374	.69	1.77
24	-.61	2.16	.4582	.65	2.01	.4098	.0325	.0820	.0258	-.56	1.89	-.0048	.70	1.81
36	-.62	2.17	.0904	.63	2.01	.2409	.0412	.1228	.0611	-.58	2.13	.0038	.70	1.92
48	-.63	2.17	.2849	.62	2.01	.2024	.0339	.0666	.0037	-.56	2.05	.0228	.70	1.95
60	-.66	2.17	.0110	.60	2.01	.0805	.0380	.0529	.0147	-.58	2.14	.0373	.70	1.99
72	-.68	2.16	.2193	.59	2.01	.0851	.0357	.0322	-.0493	-.56	2.09	.0377	.70	1.99

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 1
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.10	4.45	.1412	2.00	3.59	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
.19	1.89

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.02	4.42	.7548	1.98	3.60	.6435	.1350	.1250	.0683	.23	2.91	.1372	1.95	2.74
24	-.03	4.40	.6389	1.96	3.61	.5406	.1351	.1051	.0319	.25	3.42	.1348	1.97	3.02
36	-.08	4.39	.4712	1.92	3.61	.3318	.1309	.0366	.0472	.23	3.92	.1548	1.99	3.38
48	-.12	4.38	.3710	1.90	3.60	.2558	.1227	.0144	.0593	.22	4.13	.1474	2.00	3.47
60	-.19	4.37	.2495	1.87	3.60	.1150	.1297	-.0367	.0281	.19	4.31	.1570	1.99	3.56
72	-.23	4.37	.1847	1.84	3.60	.0940	.1252	-.0509	.0473	.18	4.37	.1517	1.98	3.56

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — AUGUST
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 2
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.56	4.44	.2291	1.52	3.63	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
.65	1.35

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.49	4.41	.7497	1.51	3.63	.6611	.2278	.2195	.1556	.68	2.94	.1503	1.43	2.71
24	.44	4.39	.6256	1.49	3.62	.5576	.2255	.1466	.1139	.69	3.46	.2355	1.45	3.01
36	.40	4.39	.4657	1.47	3.61	.3072	.2219	.1040	.1013	.67	3.93	.2154	1.49	3.45
48	.34	4.40	.3590	1.43	3.59	.2313	.2196	.0176	.0667	.67	4.15	.2487	1.50	3.53
60	.28	4.40	.2568	1.41	3.58	.0822	.2231	-.0089	.0632	.65	4.29	.2392	1.51	3.61
72	.23	4.40	.1815	1.37	3.56	.0594	.2205	-.0792	.0434	.63	4.37	.2489	1.49	3.60

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 3
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.78	4.68	.2294	1.39	3.72	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.72	4.65	.7807	1.38	3.72	.6918	.2274	.2203	.1496
24	.68	4.64	.6528	1.37	3.71	.5345	.2274	.1670	.1273
36	.65	4.61	.5174	1.36	3.69	.3221	.2241	.1128	.1125
48	.60	4.60	.3909	1.33	3.67	.2123	.2238	.0357	.0785
60	.55	4.60	.2755	1.29	3.67	.0849	.2257	-.0160	.0803
72	.51	4.60	.1936	1.27	3.66	.0502	.2255	-.0774	.0640

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X		GIVEN Y	
	.87		1.22	

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.90	2.92	.1699	1.29	2.68
.91	3.55	.2057	1.32	3.14
.89	4.01	.2126	1.35	3.52
.89	4.31	.2417	1.36	3.64
.86	4.50	.2425	1.37	3.70
.84	4.59	.2490	1.36	3.70

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — AUGUST
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 4
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.91	4.83	.2555	1.43	3.83	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
.99	1.32

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.86	4.81	.7630	1.42	3.83	.6861	.2528	.2364	.1665	•	1.01	3.12	.1984	1.37	2.77
24	.82	4.81	.6449	1.43	3.81	.5219	.2517	.1933	.1436	•	1.02	3.69	.2160	1.38	3.26
36	.80	4.81	.5379	1.43	3.80	.3210	.2482	.1226	.1275	•	1.01	4.07	.2401	1.40	3.62
48	.77	4.78	.4296	1.43	3.79	.1757	.2466	.0311	.1096	•	1.00	4.36	.2717	1.40	3.77
60	.74	4.78	.3173	1.40	3.78	.0736	.2467	-.0307	.0717	•	.99	4.58	.2815	1.41	3.81
72	.70	4.77	.2247	1.38	3.78	.0228	.2450	-.0695	.0619	•	.97	4.70	.2789	1.40	3.82

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 5
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$
$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.93	5.05	.2454	1.22	4.13	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.88	5.03	.7686	1.21	4.14	.6634	.2422	.2496	.1865
24	.84	5.05	.6728	1.21	4.14	.5051	.2433	.1816	.1331
36	.82	5.03	.5185	1.21	4.13	.2598	.2364	.1096	.1179
48	.79	5.01	.4184	1.20	4.12	.1456	.2359	.0134	.0892
60	.76	5.01	.3034	1.18	4.11	.0323	.2312	-.0425	.0635
72	.72	4.98	.2143	1.16	4.11	.0016	.2266	-.0774	.0642

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.02	1.15

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.03	3.23	.1123	1.19	3.07
1.05	3.74	.2171	1.20	3.56
1.03	4.32	.2301	1.21	3.98
1.02	4.59	.2686	1.21	4.08
1.01	4.82	.2719	1.21	4.12
.93	4.94	.2688	1.20	4.12

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 6
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	.61	5.16	.2881	.82	4.37	930	.68	.68

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.59	5.18	.7536	.83	4.38	.7065	.2850	.2955	.2171	.68	3.39	.1385	.72	3.06
24	.58	5.19	.6274	.85	4.38	.4893	.2795	.2517	.1609	.68	4.02	.2033	.75	3.78
36	.56	5.18	.4637	.83	4.37	.2693	.2723	.1518	.1093	.67	4.57	.2610	.79	4.20
48	.54	5.18	.3596	.82	4.36	.1357	.2739	.0537	.0827	.67	4.81	.2930	.80	4.33
60	.51	5.17	.2561	.82	4.35	.0422	.2715	-.0339	.0739	.66	4.99	.3073	.80	4.36
72	.51	5.15	.1749	.84	4.36	-.0103	.2663	-.0807	.0627	.64	5.08	.3078	.80	4.36

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 7
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP · CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	.24	5.24	.3124	.52	4.71	930		.34	.39

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.25	5.28	.7528	.54	4.70	.6916	.3120	.3266	.2174	.32	3.45	.1664	.43	3.36
24	.24	5.29	.6221	.53	4.70	.4783	.3096	.2976	.1599	.31	4.10	.2090	.47	4.07
36	.23	5.29	.4469	.54	4.68	.2675	.3059	.2092	.0392	.30	4.68	.2666	.50	4.49
48	.23	5.28	.3336	.54	4.68	.1402	.3075	.1016	.0912	.28	4.94	.3005	.50	4.65
60	.23	5.27	.2304	.55	4.67	.0684	.3012	.0239	.0535	.27	5.10	.3173	.51	4.70
72	.23	5.25	.1602	.58	4.66	.0167	.2971	-.0401	.0474	.26	5.17	.3234	.51	4.70

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 8
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.10	5.44	.2775	-.06	5.03	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
.03	-.18

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.09	5.47	.7555	-.04	5.02	.6982	.2776	.3019	.2141	-.02	3.56	.1004	-.14	3.55
24	-.07	5.47	.6034	-.03	5.03	.5116	.2743	.2760	.1663	-.04	4.34	.1636	-.12	4.26
36	-.05	5.49	.4457	-.02	5.01	.3024	.2746	.2107	.1229	-.07	4.87	.2171	-.10	4.74
48	-.02	5.49	.3437	-.00	4.99	.1861	.2735	.1327	.0970	-.09	5.11	.2517	-.09	4.92
60	-.01	5.50	.2511	.02	4.98	.0974	.2677	.0540	.0560	-.09	5.27	.2752	-.08	5.00
72	.00	5.49	.1915	.05	4.97	.0497	.2673	-.0156	.0493	-.10	5.34	.2864	-.08	5.02

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858)   – CAPE KENNEDY
MONTH OF RECORD – AUGUST
PERIOD OF RECORD – 1/56 – 12/73
ALTITUDE (KM)   – 9
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.35	5.88	.3071	-.47	5.61	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.22	-.56

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.33	5.92	.7581	-.44	5.61	.7261	.3065	.3449	.2349	-.26	3.83	.0997	-.53	3.79
24	-.33	5.93	.6105	-.42	5.60	.5335	.3010	.2990	.1823	-.28	4.66	.1899	-.52	4.67
36	-.30	5.97	.4584	-.41	5.58	.3435	.3047	.2627	.1453	-.31	5.22	.2253	-.50	5.18
48	-.25	5.96	.3545	-.40	5.55	.2133	.3013	.1694	.1251	-.34	5.50	.2687	-.49	5.44
60	-.21	5.95	.2846	-.39	5.54	.1176	.2989	.1037	.0948	-.35	5.64	.2914	-.49	5.56
72	-.21	5.96	.2153	-.?4	5.51	.0709	.3002	.0216	.0636	-.35	5.74	.3106	-.48	5.59

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   − CAPE KENNEDY
MONTH OF RECORD   − AUGUST
PERIOD OF RECORD − 1/56 − 12/70
ALTITUDE (KM)   − 10
ALFHA ANGLE   − 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(A. T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP					

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
−.43	6.66	.3848	−.96	6.72	930		−.29	−1.05

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	−.39	6.70	.7339	−.96	5.74	.7326	.3668	.3764	.2748	−.35	4.53	.1859	−1.01	4.51
24	−.37	6.68	.5906	−.92	6.73	.5465	.3667	.3453	.2188	−.38	5.38	.2407	−1.01	5.53
36	−.31	6.73	.4397	−.90	6.72	.3692	.3683	.2817	.1970	−.42	5.98	.2800	−1.00	6.16
48	−.25	6.71	.3494	−.91	6.70	.2290	.3668	.2029	.1653	−.45	6.24	.3180	−.99	6.48
60	−.16	6.70	.2578	−.86	6.69	.1420	.3667	.1136	.1360	−.47	6.43	.3469	−.99	6.64
72	−.12	6.70	.2129	−.81	6.66	.0949	.3629	.0570	.1091	−.47	6.51	.3601	−.99	6.69

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 11
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.60	7.68	.3746	-1.35	7.56	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.48	-1.41

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.51	7.66	.7267	-1.34	7.58	.7577	.3867	.3826	.2878	-.58	5.27	.2070	-1.40	4.88
24	-.45	7.67	.6076	-1.30	7.59	.5818	.3891	.3633	.2286	-.61	6.10	.2487	-1.41	6.05
36	-.38	7.71	.4430	-1.29	7.59	.4035	.3903	.2993	.2061	-.64	6.88	.2856	-1.41	6.82
48	-.28	7.66	.3779	-1.30	7.58	.2675	.3893	.2418	.1733	-.67	7.10	.3155	-1.40	7.20
60	-.18	7.63	.2723	-1.27	7.57	.1620	.3926	.1626	.1401	-.68	7.38	.3462	-1.40	7.42
72	-.11	7.62	.2385	-1.21	7.54	.0961	.3877	.1035	.1199	-.69	7.45	.3613	-1.39	7.51

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 12
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.82	8.53	.3450	-2.04	8.39	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.71	-2.08

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.70	8.49	.7412	-2.04	8.42	.7749	.3559	.3575	.2698	-.82	5.73	.1796	-2.07	5.25
24	-.63	8.49	.6317	-1.99	8.42	.6087	.3599	.3400	.2183	-.87	6.62	.2230	-2.10	6.56
36	-.55	8.51	.4641	-1.96	8.42	.4289	.3639	.2830	.1833	-.89	7.56	.2632	-2.11	7.49
48	-.45	8.47	.4137	-1.96	8.43	.2930	.3628	.2530	.1554	-.93	7.77	.2785	-2.11	7.91
60	-.35	8.43	.2895	-1.90	8.44	.1755	.3641	.1772	.1185	-.93	8.17	.3123	-2.11	8.19
72	-.25	8.40	.2604	-1.83	8.41	.1005	.3623	.1363	.0916	-.94	8.24	.3242	-2.11	8.29

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 13
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP | |

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-1.01	8.75	.3332	-2.96	8.53	930	-.80	-3.05

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.90	8.72	.7615	-2.94	8.57	.7880	.3428	.3601	.2636	-.93	5.67	.1449	-3.03	5.19
24	-.84	8.75	.6708	-2.90	8.57	.6511	.3493	.3692	.2164	-.98	6.49	.1746	-3.04	6.34
36	-.77	8.76	.4918	-2.86	8.56	.4609	.3547	.3114	.1672	-1.03	7.62	.2407	-3.04	7.45
48	-.64	8.72	.4284	-2.85	8.57	.3263	.3568	.2710	.1403	-1.08	7.91	.2622	-3.04	7.94
60	-.52	8.67	.3076	-2.78	8.59	.2171	.3599	.1973	.0987	-1.09	8.33	.2982	-3.04	8.25
72	-.41	8.62	.2762	-2.71	8.60	.1284	.3596	.1718	.0844	-1.11	8.41	.3039	-3.04	8.38

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — AUGUST
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 14
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP									CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.69	7.89	.3615	-3.34	7.33	930

GIVEN X   GIVEN Y
-1.44   -3.41

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-1.60	7.89	.8012	-3.30	7.37	.7526	.3714	.3886	.2778	-1.55	4.72	.1654	-3.40	4.75
24	-1.55	7.92	.7019	-3.27	7.37	.6466	.3708	.3965	.2339	-1.61	5.61	.1860	-3.41	5.46
36	-1.45	7.95	.5409	-3.22	7.38	.4735	.3752	.3448	.1735	-1.69	6.63	.2577	-3.42	6.32
48	-1.32	7.96	.4575	-3.21	7.42	.3580	.3752	.2974	.1417	-1.73	7.01	.2871	-3.42	6.72
60	-1.23	7.95	.3413	-3.16	7.44	.2419	.3831	.2404	.0992	-1.75	7.41	.3170	-3.42	7.02
72	-1.12	7.90	.3015	-3.09	7.42	.1778	.3827	.2017	.0729	-1.77	7.51	.3297	-3.43	7.14

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	– CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD	– AUGUST	Y = V(AT T)
PERIOD OF RECORD	– 1/56 – 12/70	
ALTITUDE (KM)	– 15	XP = U(AT T + DT)
ALPHA ANGLE	– 90.0	YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	-2.65	6.23	.3338	-2.59	5.23	930		-2.42	-2.53

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-2.59	6.24	.7658	-2.56	5.26	.7080	.3439	.3689	.3036	•	-2.52	3.99	.0556	-2.55	3.63
24	-2.53	6.25	.7119	-2.53	5.28	.6656	.3434	.3857	.2790	•	-2.58	4.37	.0752	-2.58	3.81
36	-2.46	6.29	.5473	-2.50	5.29	.5027	.3469	.3392	.2559	•	-2.63	5.19	.1689	-2.59	4.43
48	-2.35	6.32	.4784	-2.48	5.29	.4285	.3449	.3272	.2288	•	-2.68	5.45	.1996	-2.62	4.62
60	-2.27	6.33	.3637	-2.45	5.30	.3052	.3470	.2898	.1782	•	-2.71	5.79	.2496	-2.63	4.88
72	-2.16	6.28	.3133	-2.43	5.28	.2585	.3412	.2740	.1397	•	-2.73	5.91	.2695	-2.65	4.95

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 16
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-3.89	4.52	.3323	-1.75	3.86	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-3.66	-1.60

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-3.85	4.56	.6807	-1.73	3.89	.5477	.3436	.3237	.2817	-3.75	3.31	.1296	-1.66	3.16
24	-3.80	4.56	.6708	-1.73	3.93	.6077	.3424	.3849	.2702	-3.79	3.35	.0915	-1.66	2.97
36	-3.75	4.58	.4921	-1.69	3.96	.3889	.3526	.3443	.2432	-3.84	3.92	.1826	-1.71	3.45
48	-3.69	4.58	.4273	-1.69	3.96	.3716	.3565	.3202	.2467	-3.87	4.07	.2059	-1.72	3.49
60	-3.64	4.61	.3172	-1.68	3.97	.2689	.3596	.2725	.1843	-3.89	4.28	.2599	-1.74	3.64
72	-3.57	4.60	.2733	-1.67	3.96	.2452	.3484	.2405	.1975	-3.90	4.32	.2714	-1.75	3.68

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 17
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-5.86	3.61	.2055	-1.17	3.14	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-5.67	-.97

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-5.81	3.63	.5533	-1.16	3.16	.3474	.2160	.2677	.2870	-5.75	2.94	.0087	-1.08	2.88
24	-5.77	3.66	.6017	-1.17	3.16	.4658	.2238	.2674	.1864	-5.79	2.88	.0325	-1.07	2.73
36	-5.74	3.70	.4491	-1.16	3.17	.2858	.2336	.2308	.2124	-5.80	3.20	.0902	-1.11	2.97
48	-5.69	3.70	.4274	-1.16	3.17	.2746	.2355	.2108	.1488	-5.64	3.26	.1212	-1.12	2.99
60	-5.64	3.77	.3038	-1.14	3.16	.1908	.2316	.1369	.1908	-5.84	3.41	.1556	-1.14	3.07
72	-5.61	3.77	.2947	-1.15	3.17	.1577	.2290	.1481	.1727	-5.85	3.43	.1590	-1.15	3.08

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — AUGUST
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 18
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-8.08	3.04	.0699	-.80	2.83	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-7.90	-.63

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-8.03	3.04	.4895	-.82	2.84	.0529	.0690	.1493	.1806	-7.98	2.61	-.0112	-.78	2.79
24	-8.01	3.08	.5895	-.81	2.85	.3817	.0783	.1495	.0285	-8.02	2.46	-.0158	-.72	2.59
36	-7.96	3.11	.4163	-.82	2.83	.0301	.0808	.1561	.1297	-8.04	2.75	.0036	-.79	2.79
48	-7.91	3.13	.4351	-.79	2.83	.2336	.0848	.1320	.0183	-8.08	2.74	.0191	-.76	2.73
60	-7.85	3.15	.3193	-.79	2.83	-.0045	.0804	.1267	.0994	-8.08	2.87	.0326	-.81	2.81
72	-7.81	3.16	.3101	-.76	2.81	.1707	.0802	.1000	-.0114	-8.11	2.89	.0481	-.79	2.78

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 19
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-10.58	3.07	.1785	-.64	2.58	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-10.45	-.56

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-10.55	3.10	.3271	-.67	2.58	-.1248	.1681	-.0598	-.0037	-10.56	2.90	.2044	-.66	2.56
24	-10.51	3.10	.5627	-.64	2.57	.3515	.1564	.2343	.1398	-10.55	2.54	.0394	-.61	2.37
36	-10.46	3.11	.2487	-.62	2.54	-.1656	1578	-.0246	-.0586	-10.59	2.96	.1756	-.65	2.54
48	-10.39	3.11	.4749	-.61	2.53	.2353	.1533	.2041	.1332	-10.61	2.70	.0820	-.64	2.47
60	-10.37	3.11	.1984	-.61	2.52	-.1476	.1473	-.0338	-.0873	-10.61	2.99	.1748	-.65	2.55
72	-10.31	3.11	.3647	-.60	2.52	.2171	.1368	.1548	.1277	-10.63	2.85	.1185	-.65	2.50

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — AUGUST
PERIOD OF RECORD   — 1/56 — 12/70
ALTITUDE (KM)   — 20
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-13.06	3.39	.1099	-.44	2.34	930	-12.96	-.43

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-13.03	3.42	.0788	-.42	2.36	.0446	.1093	-.0488	.0192	-13.05	3.38	.1138	-.45	2.34
24	-12.97	3.40	.5367	-.42	2.34	.2171	.1001	.1436	.0760	-13.05	2.86	.0346	-.45	2.27
36	-12.95	3.41	.0418	-.39	2.31	-.0416	.1004	-.0365	-.0268	-13.05	3.39	.1105	-.44	2.34
48	-12.90	3.40	.4320	-.39	2.30	.0511	.0967	.1103	.0902	-13.08	3.05	.0678	-.45	2.33
60	-12.86	3.43	-.0032	-.39	2.29	-.0885	.0960	-.0637	-.0597	-13.05	3.38	.1056	-.44	2.33
72	-12.81	3.41	.3607	-.40	2.29	.0559	.0981	.0774	.0669	-13.11	3.16	.0866	-.45	2.33

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 21
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-14.90	3.45	-.0273	-.31	2.41	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-14.87	3.46	.0858	-.28	2.42	-.0681	-.0290	.1324	.1209
24	-14.81	3.44	.5396	-.29	2.42	.1771	-.0283	-.0755	-.0517
36	-14.80	3.44	.0680	-.28	2.41	-.0791	-.0310	.1119	.1347
48	-14.74	3.42	.4431	-.26	2.41	.0665	-.0340	-.0426	-.0524
60	-14.70	3.44	.0508	-.27	2.40	-.0910	-.0440	.1169	.1199
72	-14.65	3.45	.3853	-.27	2.41	.0889	-.0389	-.0246	-.0779

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-14.78	-.27

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-14.89	3.41	-.0314	-.30	2.39
-14.88	2.90	.0198	-.31	2.37
-14.89	3.41	-.0250	-.31	2.39
-14.91	3.09	-.0067	-.31	2.41
-14.90	3.42	-.0232	-.32	2.39
-14.95	3.18	-.0134	-.31	2.40

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD – 1/55 – 12/70
ALTITUDE (KM)   · 22
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-16.38	3.37	-.1259	-.22	2.67	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-16.28	-.18

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-16.34	3.38	.2441	-.19	2.65	-.2093	-.1317	.1894	.2243	-16.36	3.15	-.1377	-.22	2.57
24	-16.27	3.37	.4984	-.21	2.64	.3515	-.1219	-.1346	-.0689	-16.38	2.92	-.0694	-.21	2.49
36	-16.23	3.37	.2144	-.19	2.60	-.1811	-.1173	.1170	.1935	-16.39	3.21	-.1223	-.23	2.61
48	-16.17	3.37	.3720	-.16	2.64	.2565	-.1119	-.1304	-.0681	-16.42	3.13	-.0796	-.22	2.57
60	-16.12	3.40	.1858	-.14	2.61	-.1879	-.1177	.1146	.1732	-16.42	3.24	-.1197	-.23	2.61
72	-16.05	3.40	.2932	-.15	2.61	.2363	-.1184	-.0800	-.0849	-16.44	3.22	-.0981	-.22	2.59

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858) – CAPE KENNEDY
MONTH OF RECORD – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 23
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-17.36	3.38	.0228	-.16	2.91	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-17.28	-.08

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-17.31	3.37	.4202	-.16	2.94	-.1442	.0092	.0858	.1167	-17.34	3.04	.0035	-.17	2.87
24	-17.25	3.37	.4189	-.18	2.93	.3304	.0166	-.0180	.0109	-17.37	3.06	.0339	-.13	2.74
36	-17.21	3.36	.3405	-.15	2.86	-.1599	.0231	.0298	.0801	-17.38	3.16	.0263	-.17	2.87
48	-17.16	3.37	.3071	-.15	2.85	.2518	.0255	.0083	.0187	-17.40	3.21	.0190	-.14	2.81
60	-17.11	3.38	.2701	-.13	2.86	-.1644	.0176	.0423	.0512	-17.41	3.25	.0201	-.18	2.86
72	-17.06	3.41	.2384	-.14	2.87	.2250	.0284	.0023	-.0125	-17.41	3.28	.0281	-.15	2.83

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 24
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-18.35	3.64	.0405	-.17	2.80	930	-18.21	-.13

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-18.26	3.66	.3691	-.18	2.84	-.0719	.0295	-.0439	-.0083	-18.33	3.38	.0598	-.17	2.79
24	-18.20	3.67	.3840	-.19	2.84	.2232	.0341	.0378	.0733	-18.34	3.35	.0141	-.15	2.73
36	-18.13	3.66	.3115	-.18	2.75	-.1036	.0451	-.0158	-.0106	-18.37	3.46	.0454	-.17	2.79
48	-18.08	3.68	.2964	-.19	2.75	.1904	.0453	.0585	.0511	-18.38	3.47	.0172	-.16	2.75
60	-18.02	3.69	.2146	-.17	2.76	-.0898	.0307	-.0109	-.0513	-18.39	3.55	.0388	-.17	2.79
72	-17.96	3.71	.2473	-.18	2.73	.1422	.0330	.0339	.0505	-18.40	3.52	.0273	-.16	2.77

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS CF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 25
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	-19.22	3.82	-.0303	-.36	2.76	930	-19.11	-.35

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-19.15	3.84	.3333	-.38	2.78	-.0028	-.0317	-.0878	-.0797	-19.21	3.59	-.0015	-.37	2.75
24	-19.10	3.85	.3472	-.38	2.80	.1539	-.0312	-.0374	.0205	-19.22	3.58	-.0239	-.36	2.73
36	-19.05	3.85	.2409	-.36	2.72	-.0098	-.0265	-.0675	-.0266	-19.23	3.71	-.0147	-.35	2.76
48	-19.01	3.87	.2680	-.36	2.71	.1078	-.0304	-.0218	.0512	-19.24	3.67	-.0322	-.36	2.75
60	-18.95	3.88	.1505	-.33	2.70	-.0461	-.0355	-.0512	-.0359	-19.24	3.78	-.0244	-.36	2.76
72	-18.89	3.90	.1955	-.34	2.69	.0588	-.0360	.0040	.0379	-19.26	3.74	-.0345	-.37	2.76

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 26
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-19.75	4.16	-.0616	-.72	2.78	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-19.72	4.18	.3651	-.73	2.77	.1002	-.0603	.0167	-.0711
24	-19.66	4.21	.3951	-.71	2.77	.1081	-.0627	-.0456	-.0208
36	-19.61	4.20	.2483	-.71	2.75	.0209	-.0632	-.0342	-.0522
48	-19.55	4.24	.3301	-.72	2.76	.1224	-.0671	-.0209	-.0549
60	-19.50	4.24	.1586	-.73	2.76	-.0118	-.0634	.0422	.0053
72	-19.43	4.28	.2645	-.72	2.76	-.0210	-.0567	.0122	.0482

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-19.56	-.78

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-19.69	3.87	-.0679	-.72	2.76
-19.71	3.83	-.0483	-.73	2.76
-19.73	4.03	-.0542	-.72	2.78
-19.75	3.93	-.0542	-.73	2.76
-19.76	4.11	-.0591	-.72	2.78
-19.79	4.01	-.0661	-.72	2.78

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 27
ALPHA ANGLE - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-20.45	4.40	-.0251	-1.09	2.94	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X: -20.29   GIVEN Y: -1.10

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-20.41	4.43	.3847	-1.07	2.96	.1173	-.0391	.0609	-.0496	-20.40	4.06	-.0486	-1.08	2.91
24	-20.3x	4.44	.3869	-1.04	2.97	.0828	-.0447	-.0487	-.0544	-20.43	4.05	-.0036	-1.09	2.92
36	-20.32	4.43	.2606	-1.02	2.94	-.0201	-.0374	-.0263	.0413	-20.45	4.24	-.0179	-1.08	2.94
48	-20.31	4.45	.3348	-1.03	2.94	.1475	-.0433	-.0156	-.0182	-20.44	4.14	-.0208	-1.10	2.90
60	-20.27	4.48	.1912	-1.02	2.96	.0961	-.0367	.0823	.0179	-20.46	4.32	-.0446	-1.10	2.91
72	-20.19	4.54	.2449	-1.02	2.98	.1128	-.0342	-.0269	-.0337	-20.47	4.26	-.0163	-1.09	2.92

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) - CAPE KENNEDY

X = U'AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT :.M.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8	1/56 - 12/70	0	90.0	-.58	2.14	.0388	.69	1.99	930
8	1/56 - 12/70	1	90.0	.10	4.45	.1412	2.00	3.59	930
8	1/56 - 12/70	2	90.0	.56	4.44	.2291	1.52	3.63	930
8	1/56 - 12/70	3	90.0	.78	4.68	.2294	1.39	3.72	930
8	1/56 - 12/70	4	90.0	.91	4.83	.2555	1.43	3.83	930
8	1/56 - 12/70	5	90.0	.93	5.05	.2454	1.22	4.13	930
8	1/56 - 12/70	6	90.0	.61	5.16	.2891	.82	4.37	930
8	1/56 - 12/70	7	90.0	.24	5.24	.3124	.52	4.71	930
8	1/56 - 12/70	8	90.0	-.10	5.44	.2775	-.06	5.03	930
8	1/56 - 12/70	9	90.0	-.35	5.88	.3071	-.47	5.61	930
8	1/56 - 12/70	10	90.0	-.43	6.66	.3648	-.96	6.72	930
8	1/56 - 12/70	11	90.0	-.60	7.68	.3746	-1.35	7.56	930
8	1/56 - 12/70	12	90.0	-.82	8.53	.3450	-2.04	8.38	930
8	1/56 - 12/70	13	90.0	-1.01	8.75	.3332	-2.96	8.53	930
8	1/56 - 12/70	14	90.0	-1.69	7.89	.3615	-3.34	7.33	930
8	1/56 - 12/70	15	90.0	-2.65	6.23	.3338	-2.59	5.23	930
8	1/56 - 12/70	16	90.0	-3.89	4.52	.3323	-1.75	3.86	930
8	1/56 - 12/70	17	90.0	-5.86	3.61	.2055	-1.17	3.14	930
8	1/56 - 12/70	18	90.0	-8.08	3.04	.0699	-.80	2.83	930
8	1/56 - 12/70	19	90.0	-10.58	3.07	.1785	-.64	2.58	930
8	1/56 - 12/70	20	90.0	-13.06	3.39	.1099	-.44	2.34	930
8	1/56 - 12/70	21	90.0	-14.90	3.45	-.0273	-.31	2.41	930
8	1/56 - 12/70	22	90.0	-16.38	3.37	-.1259	-.22	2.67	930
8	1/56 - 12/70	23	90.0	-17.36	3.39	.0228	-.16	2.91	930
8	1/56 - 12/70	24	90.0	-18.35	3.64	.0405	-.17	2.80	930
8	1/56 - 12/70	25	90.0	-19.22	3.82	-.0303	-.36	2.76	930
8	1/56 - 12/70	26	90.0	-19.75	4.16	-.0616	-.72	2.78	930
8	1/56 - 12/70	27	90.0	-20.45	4.40	-.0251	-1.09	2.94	930

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - SEPTEMBER
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 0
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.59	2.77	.2344	-.24	2.70	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-1.63	-.28

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-1.60	2.78	.5214	-.25	2.71	.5819	.2386	.2456	.1740	-1.61	2.36	.1148	-.26	2.18
24	-1.62	2.77	.4642	-.26	2.72	.4772	.2405	.2160	.1162	-1.60	2.46	.1709	-.25	2.36
36	-1.62	2.77	.1874	-.27	2.73	.2731	.2373	.1458	.0741	-1.59	2.72	.2121	-.24	2.59
48	-1.64	2.78	.1938	-.28	2.74	.1999	.2388	.1317	.0600	-1.59	2.72	.2156	-.24	2.63
60	-1.63	2.78	-.0022	-.29	2.75	.1213	.2390	.0658	.0294	-1.59	2.77	.2332	-.24	2.68
72	-1.64	2.80	.1034	-.29	2.75	.0760	.2346	.0685	.0647	-1.59	2.76	.2271	-.24	2.69

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - SEPTEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 1   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-2.26	5.65	.2675	.40	4.93	900	-2.06	.40

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-2.27	5.65	.7763	.38	4.93	.6905	.2719	.3070	.1852	-2.10	3.56	.1028	.43	3.51
24	-2.28	5.65	.6154	.38	4.95	.5174	.2713	.2843	.1361	-2.13	4.45	.1616	.43	4.15
36	-2.26	5.64	.4196	.41	4.99	.3136	.2774	.2104	.0593	-2.18	5.12	.2288	.42	4.63
48	-2.28	5.63	.2844	.41	5.01	.2468	.2783	.1707	.0336	-2.20	5.41	.2481	.41	4.75
60	-2.26	5.64	.1739	.40	5.04	.1247	.2764	.0939	.0084	-2.23	5.56	.2622	.41	4.88
72	-2.28	5.66	.1117	.43	5.08	.0967	.2741	.0203	.0113	-2.24	5.61	.2702	.39	4.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — SEPTEMBER
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 2
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-.93	5.99	.2796	.42	4.77	900	-.88	.49

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.91	6.00	.7815	.43	4.79	.6904	.2825	.3246	.2230	-.91	3.73	.0552	.47	3.39
24	-.91	6.00	.6296	.46	4.81	.5050	.2823	.2870	.1686	-.92	4.65	.1561	.44	4.05
36	-.86	5.99	.4677	.48	4.85	.3052	.2816	.2154	.1155	-.94	5.29	.2198	.42	4.49
48	-.84	5.97	.3547	.52	4.89	.2466	.2789	.1726	.0687	-.95	5.59	.2459	.41	4.59
60	-.82	5.98	.2649	.53	4.92	.1426	.2798	.1156	.0649	-.95	5.77	.2628	.42	4.70
72	-.80	6.00	.1886	.53	4.95	.1001	.2798	.0653	.0482	-.95	5.88	.2741	.42	4.74

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - SEPTEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 3
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-.01	6.01	.2608	.52	4.63	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.02	6.01	.7836	.55	4.65	.6856	.2628	.2954	.2264
24	.03	6.01	.6424	.58	4.69	.4956	.2610	.2838	.1781
36	.05	6.01	.4937	.60	4.74	.3120	.2575	.2479	.1238
48	.06	5.99	.3745	.62	4.77	.2351	.2556	.2220	.0824
60	.07	5.99	.2859	.65	4.81	.1688	.2537	.1573	.0665
72	.09	6.01	.2242	.67	4.84	.1058	.2507	.1209	.0545

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.25	.61

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.17	3.73	.0358	.59	3.33
.13	4.60	.1128	.57	3.96
.09	5.22	.1715	.55	4.33
.06	5.57	.2030	.54	4.44
.04	5.75	.2311	.53	4.53
.03	5.85	.2425	.53	4.59

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12068)   - CAPE KENNEDY
MONTH OF RECORD   - SEPTEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 4
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.59	6.01	.2804	.56	4.62	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.81	.62

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.64	6.02	.7842	.61	4.66	.7206	.2863	.2988	.2514	.72	3.72	.0646	.58	3.17
24	.69	6.02	.6301	.63	4.70	.5286	.2852	.2813	.2115	.67	4.66	.1348	.57	3.87
36	.69	6.01	.4850	.67	4.74	.3347	.2797	.2511	.1479	.65	5.25	.1911	.57	4.28
48	.71	6.01	.3892	.69	4.78	.2488	.2767	.2261	.1108	.63	5.53	.2181	.56	4.41
60	.72	6.02	.3071	.71	4.84	.1728	.2722	.1601	.0932	.62	5.72	.2470	.55	4.51
72	.75	6.02	.2706	.72	4.86	.1160	.2722	.1291	.0707	.61	5.78	.2583	.56	4.56

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	– CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD	– SEPTEMBER	Y = V(AT T)
PERIOD OF RECORD	– 1/56 – 12/70	
ALTITUDE (KM)	– 5	XP = U(AT T + DT)
ALPHA ANGLE	– 90.0	YP = V(AT T + DT)

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| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP |

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
.89	6.21	.3041	.39	4.89	900		1.06	.42

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.95	6.23	.8079	.44	4.93	.7083	.3072	.3420	.2717	.98	3.66	.0299	.38	3.39
24	1.02	6.24	.6546	.48	4.97	.5512	.3053	.3080	.2124	.91	4.69	.1549	.36	4.01
36	1.05	6.25	.5059	.52	5.03	.3557	.2955	.2762	.1755	.89	5.35	.1980	.36	4.48
48	1.08	6.26	.4158	.55	5.07	.2392	.2918	.2316	.1306	.88	5.65	.2370	.36	4.67
60	1.11	6.26	.3381	.58	5.15	.1704	.2852	.1612	.1015	.87	5.84	.2704	.36	4.78
72	1.16	6.25	.2977	.60	5.18	.1152	.2880	.1069	.0614	.86	5.92	.2905	.36	4.84

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858) — CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD — SEPTEMBER   Y = V(AT T)
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 6   XP = U(AT T + DT)
ALPHA ANGLE — 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
1.10	6.44	.3035	.20	5.28	900	1.23	.20

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	1.17	6.45	.8233	.25	5.32	.7490	.3042	.3463	.2411	1.15	3.66	.0679	.17	3.44
24	1.24	6.45	.6840	.31	5.37	.5645	.3062	.3458	.1892	1.10	4.70	.1315	.15	4.25
36	1.28	6.47	.5388	.38	5.41	.3911	.3013	.3283	.1494	1.09	5.43	.1737	.14	4.72
48	1.31	6.47	.4396	.41	5.46	.2749	.2971	.2842	.1164	1.07	5.79	.2155	.14	4.95
60	1.36	6.46	.3647	.44	5.53	.1893	.2911	.2258	.1082	1.05	6.00	.2457	.15	5.10
72	1.41	6.45	.3178	.44	5.56	.1353	.2947	.1518	.0859	1.05	6.11	.2744	.16	5.20

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 7
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
1.54	6.94	.3467	.23	5.76	900		1.60	.24

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	1.60	6.96	.8234	.30	5.82	.7719	.3429	.4003	.2817	1.54	3.94	.0490	.19	3.57
24	1.68	6.98	.7025	.38	5.85	.5972	.3439	.3869	.2293	1.49	4.94	.1468	.15	4.48
36	1.74	6.99	.5640	.46	5.88	.4410	.3380	.3492	.1828	1.46	5.73	.2119	.13	5.02
48	1.79	6.99	.4507	.46	5.92	.3305	.3322	.3146	.1482	1.45	6.20	.2503	.14	5.29
60	1.85	6.99	.3727	.49	5.98	.2535	.3273	.2583	.1271	1.44	6.44	.2831	.15	5.47
72	1.92	6.99	.3296	.48	6.05	.1972	.3234	.2045	.1237	1.43	6.55	.3026	.16	5.58

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — SEPTEMBER
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 8
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
2.20	7.56	.3835	.11	6.33	900		2.19	.11

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	2.29	7.60	.8362	.20	6.39	.7647	.3902	.4428	.3174		2.12	4.14	.0567	.04	3.95
24	2.39	7.64	.7224	.28	6.42	.6046	.3943	.4303	.2734		2.06	5.23	.1479	-.01	4.86
36	2.49	7.69	.5996	.35	6.45	.4513	.3915	.3882	.2266		2.03	6.05	.2226	-.04	5.46
48	2.56	7.69	.4945	.36	6.50	.3474	.3870	.3624	.2005		2.02	6.57	.2571	-.03	5.72
60	2.63	7.70	.4262	.37	6.58	.2706	.3773	.3108	.1923		2.01	6.83	.2901	-.02	5.92
72	2.70	7.70	.3787	.36	6.67	.2287	.3697	.2538	.1863		2.01	6.99	.3170	-.01	6.05

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 9
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	3.10	8.17	.3868	.10	7.00	900		3.13	.10

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	3.21	8.19	.8343	.18	7.05	.7575	.3887	.4275	.3128	3.04	4.51	.1086	.04	4.46
24	3.35	8.22	.7244	.28	7.13	.6214	.3910	.4215	.2749	2.95	5.63	.1642	-.03	5.31
36	3.48	8.27	.6048	.37	7.17	.4726	.3890	.3966	.2483	2.89	6.51	.2098	-.07	5.95
48	3.57	8.28	.5087	.40	7.21	.3778	.3854	.3735	.2323	2.88	7.03	.2434	-.08	6.25
60	3.63	8.28	.4325	.43	7.28	.2951	.3763	.3137	.2165	2.88	7.36	.2868	-.06	6.51
72	3.75	8.27	.3776	.43	7.36	.2448	.3687	.2625	.2132	2.86	7.54	.3132	-.05	6.66

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 10
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(A, T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X, Y, XP, YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.99	9.06	.3811	−.14	8.01	900

DY HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	4.10	9.06	.8354	−.06	8.09	.7692	.3716	.4270	.3022
24	4.27	9.10	.7181	.00	8.18	.6218	.3618	.4311	.2610
36	4.39	9.15	.5889	.10	8.23	.4659	.3602	.4227	.2398
48	4.50	9.18	.4906	.15	8.27	.3687	.3521	.3846	.2167
60	4.57	9.20	.4171	.18	8.30	.2883	.3444	.3215	.2072
72	4.69	9.19	.3675	.20	8.37	.2418	.3367	.2556	.2164

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.08	−.22

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.98	4.98	.0885	−.25	4.97
3.86	6.31	.1356	−.29	6.02
3.81	7.32	.1797	−.33	6.74
3.78	7.88	.2337	−.34	7.12
3.77	8.21	.2785	−.32	7.43
3.74	8.38	.3075	−.31	7.63

QUADRAVARIATE AND CONDITICNAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 11
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	4.85	10.03	.3785	-.49	9.02	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.82	-.83

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	4.97	10.03	.8427	-.44	9.11	.7900	.3660	.4017	.3225	4.72	5.40	.0913	-.80	5.42
24	5.16	10.04	.7299	-.36	9.17	.6195	.3556	.4059	.2686	4.60	6.85	.1491	-.81	6.85
36	5.2ᶜ	10.09	.6040	-.28	9.22	.4650	.3540	.3930	.2438	4.56	7.98	.1919	-.80	7.67
48	5.40	10.12	.4971	-.21	9.27	.3697	.3477	.3620	.2124	4.55	8.69	.2418	-.79	8.07
60	5.48	10.13	.4121	-.15	9.29	.2909	.3408	.3098	.2011	4.55	9.11	.2817	-.77	8.39
72	5.63	10.10	.3533	-.14	9.37	.2489	.3342	.2577	.2138	4.52	9.32	.3054	-.75	8.57

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 12
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
5.85	10.63	.3403	-1.09	9.93	900		5.98	-1.22

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.99	10.66	.8553	-1.04	9.99	.8078	.3275	.3722	.2806	5.84	5.5:	.0719	-1.23	5.74
24	6.19	10.66	.7507	-.98	10.04	.6377	.3176	.3755	.2358	5.69	7.02	.1212	-1.27	7.43
36	6.32	10.70	.6213	-.94	10.07	.4755	.3158	.3553	.2107	5.64	8.33	.1702	-1.28	8.47
48	6.45	10.72	.5242	-.86	10.11	.3673	.3086	.3306	.1911	5.60	9.05	.2064	-1.30	8.95
60	6.57	10.73	.4358	-.79	10.15	.2869	.3037	.2924	.1832	5.58	9.55	.2406	-1.31	9.27
72	6.74	10.68	.3771	-.77	10.24	.2182	.2963	.2540	.1875	5.54	9.81	.2638	-1.31	9.49

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY            X  = U(AT T)
MONTH OF RECORD    - SEPTEMBER               Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 13                      XP = U(AT T + DT)
ALPHA ANGLE        ~ 90.0                    YP = V(AT T + DT)
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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP										CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N					GIVEN X	GIVEN Y			
	5.96	10.90	.3121	-1.77	10.36	900					6.13	-1.82			

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	6.12	10.97	.8612	-1.72	10.39	.8264	.3014	.3436	.2396	5.97	5.54	.1140	-1.85	5.74
24	6.33	10.96	.7672	-1.66	10.44	.6742	.2907	.3385	.1909	5.82	6.98	.1568	-1.90	7.49
36	6.46	11.00	.6362	-1.61	10.48	.4984	.2908	.3243	.1655	5.76	8.41	.1752	-1.92	8.77
48	6.57	11.02	.5410	-1.54	10.53	.3742	.2831	.3002	.1595	5.73	9.17	.1941	-1.94	9.38
60	6.70	11.01	.4479	-1.47	10.57	.2779	.2789	.2663	.1651	5.70	9.74	.2191	-1.95	9.74
72	6.88	10.99	.3989	-1.44	10.63	.2137	.2765	.2308	.1755	5.65	9.97	.2362	-1.96	9.94

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - SEPTEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 14   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	4.91	10.16	.2684	-2.46	9.48	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	4.93	-2.43

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.06	10.22	.8625	-2.41	9.49	.8239	.2621	.2917	.2001	4.80	5.13	.1329	-2.48	5.52
24	5.26	10.21	.7782	-2.34	9.56	.6866	.2545	.3045	.1473	4.65	6.36	.1442	-2.56	6.77
36	5.40	10.25	.6621	-2.30	9.58	.5098	.2553	.2868	.1140	4.60	7.59	.1654	-2.59	8.01
48	5.49	10.24	.5648	-2.21	9.57	.3856	.2504	.2757	.1019	4.60	8.37	.1692	-2.63	8.57
60	5.64	10.22	.4860	-2.15	9.62	.2735	.2491	.2431	.1075	4.57	8.88	.1857	-2.65	8.96
72	5.82	10.17	.4352	-2.13	9.66	.2057	.2467	.2215	.1263	4.52	9.14	.1950	-2.66	9.13

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 15
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
2.68	8.57	.2226	-2.41	7.22	900		2.97	-2.27

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	2.84	8.66	.8616	-2.37	7.25	.8176	.2131	.2652	.1649	2.79	4.34	.0430	-2.32	4.11
24	3.00	8.67	.7854	-2.32	7.29	.6950	.2175	.2670	.1326	2.65	5.29	.0878	-2.38	5.12
36	3.14	8.71	.6769	-2.28	7.30	.5392	.2156	.2605	.1085	2.57	6.30	.1071	-2.43	5.99
48	3.25	8.68	.5911	-2.22	7.31	.4209	.2143	.2636	.1112	2.52	6.91	.1013	-2.47	6.43
60	3.37	8.65	.5007	-2.17	7.36	.3115	.2086	.2407	.1245	2.48	7.41	.1197	-2.50	6.74
72	3.52	8.62	.4441	-2.14	7.40	.2377	.2055	.2135	.1261	2.43	7.67	.1410	-2.52	6.91

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 16
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.23	6.62	.3031	-1.98	5.15	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.34	6.65	.8503	-1.96	5.18	.6884	.2986	.3113	.2583
24	.46	6.68	.8071	-1.93	5.19	.6693	.2970	.3106	.2296
36	.57	6.69	.7150	-1.90	5.21	.4834	.2953	.3144	.2227
48	.71	6.71	.8460	-1.89	5.21	.3866	.2879	.3027	.1871
60	.83	6.69	.5615	-1.84	5.23	.2633	.2860	.2891	.1897
72	.96	6.67	.5148	-1.82	5.25	.2270	.2767	.2575	.1783

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X		GIVEN Y	
	.10		-1.90	
MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.03	3.49	.0941	-1.97	3.70
-.06	3.91	.1358	-2.00	3.78
-.10	4.63	.1225	-2.05	4.42
-.16	5.06	.1560	-2.08	4.64
-.17	5.48	.1740	-2.12	4.84
-.20	5.67	.2016	-2.14	4.91

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - SEPTEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 17
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP										CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-1.81	5.38	.2206	-1.21	3.71	900

GIVEN X   GIVEN Y
-1.80   -1.10

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-1.71	5.40	.7522	-1.15	3.75	.5041	.2228	.2301	.2114	-1.67	3.54	.0474	-1.19	3.17
24	-1.61	5.40	.7709	-1.15	3.75	.5591	.2147	.2521	.1659	-1.95	3.43	.0500	-1.20	3.03
36	-1.51	5.40	.6261	-1.11	3.76	.2894	.2145	.2098	.1286	-1.99	4.20	.1231	-1.23	3.51
48	-1.41	5.41	.5921	-1.11	3.76	.2719	.2066	.2278	.1267	-2.04	4.34	.1110	-1.25	3.51
60	-1.30	5.40	.4965	-1.07	3.80	.0688	.2103	.1701	.0735	-2.06	4.67	.1603	-1.26	3.65
72	-1.20	5.37	.4616	-1.07	3.80	.0594	.2039	.1725	.1078	-2.09	4.78	.1609	-1.28	3.65

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 18
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-3.89	4.43	.2028	-.75	3.01	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-3.79	4.45	.6925	-.74	3.01	.3336	.2018	.1810	.1462
24	-3.70	4.45	.7423	-.72	3.00	.4210	.1953	.1948	.1189
36	-3.62	4.46	.5894	-.70	3.00	.1243	.1979	.1887	.0786
48	-3.55	4.44	.5789	-.68	3.00	.1252	.1893	.1470	.0444
60	-3.46	4.49	.4489	-.68	3.01	-.0372	.1890	.1459	.0045
72	-3.40	4.47	.4468	-.69	3.01	-.0006	.1879	.1177	.0176

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-3.81	-.72

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-3.90	3.20	.1118	-.75	2.82
-3.97	2.97	.1139	-.76	2.71
-4.00	3.58	.1205	-.78	2.95
-4.04	3.60	.1554	-.78	2.97
-4.04	3.94	.1502	-.79	2.98
-4.07	3.95	.1679	-.79	2.99

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD - 1/56 – 12/70
ALTITUDE (KM)   – 19
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

							QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-6.10	3.95	.1730	-.64	2.61	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-9.13	-.63

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-6.02	3.95	.6180	-.65	2.61	.0816	.1794	.1269	.1551	-8.00	3.10	.1182	-.88	2.59
24	-5.91	3.90	.6931	-.63	2.61	.3266	.1773	.1713	.0835	-8.39	2.84	.0982	-.90	2.45
36	-5.83	3.90	.5503	-.64	2.62	.0291	.1760	.0969	.0893	-7.94	3.30	.1441	-.85	2.60
48	-5.76	3.91	.5199	-.61	2.64	.1033	.1777	.1191	.0522	-7.90	3.37	.1356	-.88	2.59
60	-5.67	3.94	.4431	-.63	2.65	-.0856	.1732	.0949	.0614	-7.65	3.54	.1506	-.88	2.59
72	-5.60	3.93	.3917	-.60	2.66	.0426	.1736	.0545	.0211	-7.52	3.63	.1671	-.76	2.61

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869)   - CAPE KENNEDY
MONTH OF RECORD - SEPTEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 20
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
-8.07	3.89	.1293	-.45	2.42	900		-9.13	-.46

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-7.98	3.89	.5362	-.46	2.41	.0342	.1476	.0125	.1073	-8.69	3.28	.1443	-.46	2.42
24	-7.86	3.84	.6370	-.44	2.43	.2163	.1479	.1105	.0644	-8.92	2.93	.0865	-.52	2.35
36	-7.77	3.83	.4595	-.44	2.45	.0100	.1529	.0281	.0926	-8.71	3.46	.1310	-.48	2.42
48	-7.67	3.79	.5170	-.44	2.46	.0210	.1527	.0414	.0264	-8.86	3.33	.1273	-.49	2.41
60	-7.58	3.83	.3695	-.43	2.47	-.0679	.1462	-.0030	.0499	-8.63	3.65	.1393	-.46	2.41
72	-7.47	3.81	.4161	-.41	2.46	-.0016	.1434	.0127	.0374	-8.78	3.54	.1363	-.47	2.42

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 21
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-9.64	3.60	.0294	-.21	2.47	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-9.72	-.22

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-9.53	3.60	.5485	-.22	2.46	.0499	.0327	.0497	.1039	-9.74	3.00	-.0024	-.22	2.47
24	-9.41	3.57	.6412	-.20	2.47	.1526	.0413	.0515	.0505	-9.84	2.76	-.0096	-.23	2.44
36	-9.30	3.58	.4709	-.20	2.48	-.0066	.0390	.0057	.0712	-9.84	3.17	.0308	-.22	2.47
48	-9.19	3.55	.5136	-.20	2.48	.0543	.0485	-.0199	.0211	-9.92	3.09	.0465	-.21	2.47
60	-9.07	3.59	.3631	-.19	2.49	-.0296	.0270	.0105	.0568	-9.88	3.35	.0290	-.22	2.47
72	-8.96	3.60	.4204	-.20	2.49	.0309	.0332	-.0436	.0111	-9.96	3.27	.0529	-.19	2.47

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD – SEPTEMBER   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 22   XP = U(AT T + DT)
ALPHA ANGLE – 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
-10.89	3.55	-.0208	-.27	2.50	900		-10.95	-.25

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-10.79	3.55	.5591	-.27	2.52	-.0152	-.0346	-.0381	.0228	-10.98	2.94	.0015	-.26	2.49
24	-10.67	3.55	.5968	-.28	2.51	.1836	-.0239	-.0364	-.0387	-11.06	2.85	.0068	-.26	2.45
36	-10.57	3.56	.4972	-.26	2.54	-.0459	-.0337	-.0444	.0264	-11.07	3.08	.0039	-.26	2.49
48	-10.45	3.58	.4545	-.27	2.50	.0576	-.0037	-.0502	-.0091	-11.11	3.16	.0028	-.25	2.49
60	-10.34	3.59	.4041	-.28	2.50	-.0537	-.0061	-.0152	.0059	-11.13	3.25	-.0155	-.26	2.49
72	-10.22	3.65	.3793	-.30	2.51	.0146	-.0053	-.0808	-.0254	-11.16	3.28	.0111	-.23	2.49

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY　　　　　X = U(AT T)
MONTH OF RECORD – SEPTEMBER　　　　　　Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 23　　　　　　　　　　XP = U(AT T + DT)
ALPHA ANGLE   – 90.0　　　　　　　　　YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-11.79	3.72	.0281	-.27	2.51	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-11.80	-.27

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-11.67	3.74	.5870	-.25	2.47	-.0489	.0242	.0331	.0309	-11.87	3.01	.0118	-.28	2.51
24	-11.57	3.75	.5892	-.27	2.49	.1369	.0293	.0187	.0286	-11.93	3.01	.0195	-.28	2.49
36	-11.44	3.79	.5080	-.25	2.48	-.0906	.0197	-.0039	.0208	-11.97	3.21	.0261	-.27	2.50
48	-11.30	3.85	.4573	-.27	2.49	.0328	.0275	-.0134	.0120	-12.01	3.31	.0385	-.27	2.51
60	-11.18	3.87	.4178	-.27	2.49	-.0823	.0196	-.0477	-.0288	-12.04	3.38	.0498	-.26	2.50
72	-11.03	3.89	.3637	-.29	2.50	.0050	.0127	.0090	-.0100	-12.06	3.47	.0267	-.28	2.51

QUADRAVARIATE AND CONDITIONAL BIVARIAT_ NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 24
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-12.39	3.90	.0595	-.45	2.62	900	-12.32	-.48

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-12.26	3.94	.6088	-.42	2.60	-.0072	.0653	.0219	.0710	-12.43	3.09	.0585	-.45	2.62
24	-12.16	3.95	.6177	-.45	2.60	.2201	.0595	.0495	.0793	-12.49	3.06	.0256	-.46	2.56
36	-12.03	3.98	.5247	-.43	2.61	-.0252	.0536	.0379	.0575	-12.54	3.32	.0475	-.46	2.62
48	-11.90	4.02	.4848	-.44	2.62	.0260	.0446	-.0462	.0561	-12.59	3.41	.0927	-.44	2.62
60	-11.75	4.07	.4416	-.44	2.63	-.0364	.0382	.0386	.0341	-12.63	3.50	.0481	-.47	2.62
72	-11.61	4.07	.3998	-.45	2.64	-.0382	.0401	-.0168	.0149	-12.66	3.57	.0722	-.44	2.62

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 25
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
-12.99	4.20	.0619	-.65	2.76	900		-12.80	-.70

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-12.84	4.23	.6180	-.63	2.77	.3701	.0474	.0355	.0889		-12.97	3.25	.0459	-.66	2.76
24	-12.70	4.23	.6165	-.61	2.76	.1799	.0496	.0102	.1174		-13.06	3.28	.0520	-.67	2.72
36	-12.52	4.26	.5167	-.61	2.75	-.0118	.0468	.0060	.0903		-13.13	3.58	.0699	-.65	2.76
48	-12.37	4.29	.4858	-.60	2.76	.0642	.0522	.0143	.1120		-13.20	3.65	.0570	-.66	2.76
60	-12.18	4.30	.4570	-.62	2.77	-.0670	.0504	.0182	.0171		-13.26	3.73	.0599	-.66	2.76
72	-12.05	4.30	.4082	-.62	2.77	-.0027	.0530	.0520	.0520		-13.29	3.83	.0448	-.68	2.76

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 26
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-13.32	4.65	.0753	-.93	2.66	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-13.15	4.63	.6373	-.95	2.68	.1427	.0462	.0240	.0696
24	-13.02	4.64	.6398	-.94	2.67	.1992	.0480	.0535	.0749
36	-12.82	4.66	.5573	-.92	2.66	.0336	.0453	-.0008	.0948
48	-12.56	4.69	.5447	-.91	2.64	.0456	.0576	.0511	.1445
60	-12.46	4.71	.4642	-.92	2.65	-.0671	.0510	.0022	.0570
72	-12.33	4.73	.4594	-.93	2.63	-.0330	.0548	.0991	.0826

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-13.18	-.96

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-13.34	3.58	.0713	-.94	2.63
-13.43	3.57	.0432	-.94	2.60
-13.53	3.85	.0988	-.94	2.66
-13.61	3.86	.0514	-.95	2.65
-13.66	4.11	.0867	-.93	2.65
-13.71	4.12	.0368	-.98	2.64

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - SEPTEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 27
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-13.57	5.13	-.0414	-1.02	3.02	900	-13.23	-1.05

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-13.37	5.10	.6492	-1.06	3.03	.1768	-.0421	.0124	.0434	-13.48	3.88	-.0833	-1.01	2.97
24	-13.18	5.15	.6705	-1.05	3.02	.1590	-.0280	-.0043	.0412	-13.61	3.79	-.0659	-1.02	2.98
36	-12.94	5.11	.5820	-1.07	3.01	.0116	-.0110	.0141	.0775	-13.74	4.15	-.0626	-1.02	3.02
48	-12.76	5.15	.5877	-1.05	3.01	.0214	-.0072	-.0289	.0791	-13.85	4.13	-.0326	-1.01	3.02
60	-12.56	5.16	.5069	-1.10	2.99	-.0127	-.0118	.3024	.0773	-13.90	4.40	-.0485	-1.02	3.02
72	-12.40	5.21	.5212	-1.10	2.97	.0189	-.0075	-.0098	.0908	-13.99	4.35	-.0449	-1.01	3.02

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) — CAPE KENNEDY

$X = U(AT\ T)$
$Y = V(AT\ T)$

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
9	1/56 - 12/70	0	90.0	-1.59	2.77	.2344	-.24	2.70	900
9	1/56 - 12/70	1	90.0	-2.26	5.65	.2675	.40	4.93	900
9	1/56 - 12/70	2	90.0	-.93	5.99	.2796	.42	4.77	900
9	1/56 - 12/70	3	90.0	-.01	6.01	.2608	.52	4.63	900
9	1/56 - 12/70	4	90.0	.59	6.01	.2804	.56	4.62	900
9	1/56 - 12/70	5	90.0	.89	6.21	.3041	.39	4.89	900
9	1/56 - 12/70	6	90.0	1.10	6.44	.3035	.20	5.28	900
9	1/56 - 12/70	7	90.0	1.54	6.94	.3467	.23	5.76	900
9	1/56 - 12/70	8	90.0	2.20	7.56	.3835	.11	6.33	900
9	1/56 - 12/70	9	90.0	3.10	8.17	.3868	.10	7.00	900
9	1/56 - 12/70	10	90.0	3.99	9.06	.3811	-.14	8.01	900
9	1/56 - 12/70	11	90.0	4.85	10.03	.3785	-.49	9.02	900
9	1/56 - 12/70	12	90.0	5.85	10.63	.3403	-1.09	9.93	900
9	1/56 - 12/70	13	90.0	5.96	10.90	.3121	-1.77	10.36	900
9	1/56 - 12/70	14	90.0	4.91	10.16	.2684	-2.46	9.48	900
9	1/56 - 12/70	15	90.0	2.68	8.57	.2226	-2.41	7.22	900
9	1/56 - 12/70	16	90.0	.23	6.62	.3031	-1.98	5.15	900
9	1/56 - 12/70	17	90.0	-1.81	5.38	.2206	-1.21	3.71	900
9	1/56 - 12/70	18	90.0	-3.89	4.43	.2028	-.75	3.01	900
9	1/56 - 12/70	19	90.0	-6.10	3.95	.1730	-.64	2.61	900
9	1/56 - 12/70	20	90.0	-8.07	3.89	.1293	-.45	2.42	900
9	1/56 - 12/70	21	90.0	-9.64	3.60	.0294	-.21	2.47	900
9	1/56 - 12/70	22	90.0	-10.99	3.55	-.0208	-.27	2.50	900
9	1/56 - 12/70	23	90.0	-11.79	3.72	.0281	-.27	2.51	900
9	1/56 - 12/70	24	90.0	-12.39	3.90	.0595	-.45	2.62	900
9	1/56 - 12/70	25	90.0	-12.99	4.20	.0619	-.65	2.76	900
9	1/56 - 12/70	26	90.0	-13.32	4.65	.0753	-.93	2.66	900
9	1/56 - 12/70	27	90.0	-13.57	5.13	-.0414	-1.02	3.02	900

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 0
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N			GIVEN X	GIVEN Y		
	-1.16	3.18	.0349	-1.18	2.89	930			-.95	-1.34		

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-1.13	3.19	.6181	-1.19	2.89	.6390	.0333	.1234	-.0496	-1.03	2.49	.0053	-1.25	2.20
24	-1.10	3.19	.5459	-1.20	2.89	.4752	.0303	.1477	-.1108	-1.06	2.63	.0196	-1.23	2.51
36	-1.06	3.20	.2921	-1.22	2.88	.2737	.0254	.1377	-.1039	-1.11	3.02	.0291	-1.20	2.75
48	-1.02	3.20	.2302	-1.24	2.89	.1618	.0171	.0833	-.0501	-1.14	3.03	.0253	-1.19	2.84
60	-.99	3.23	.0658	-1.25	2.89	.0740	.0147	.0255	-.0473	-1.15	3.16	.0363	-1.18	2.88
72	-.95	3.23	.0655	-1.28	2.90	.0565	.0140	-.0164	.0007	-1.16	3.16	.0365	-1.18	2.88

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — OCTOBER
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM)   — I
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-2.02	6.02	.1915	-1.15	5.14	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-2.00	6.08	.7957	-1.19	5.15	.7282	.1842	.2916	.0157
24	-1.96	6.12	.5771	-1.26	5.15	.5213	.1659	.2972	-.0933
36	-1.92	6.16	.3575	-1.31	5.15	.2916	.1838	.2367	-.1205
48	-1.86	6.23	.1939	-1.35	5.17	.1484	.1976	.1601	-.0936
60	-1.81	6.29	.1078	-1.37	5.18	.0608	.1910	.0742	-.0303
72	-1.74	6.36	.0427	-1.44	5.17	.0627	.1941	.0404	.0192

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-1.56	-1.42

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-1.63	3.56	.1286	-1.25	3.42
-1.73	4.76	.1780	-1.15	4.26
-1.85	5.50	.1801	-1.12	4.82
-1.94	5.84	.1844	-1.12	5.03
-1.99	5.99	.1878	-1.14	5.12
-2.01	6.01	.1895	-1.14	5.12

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 2
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.46	6.20	.2327	-.21	4.89	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
.90	-.40

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.46	6.30	.7766	-.25	4.95	.6757	.2339	.3035	.1091	.81	3.88	.0962	-.25	3.53
24	.49	6.32	.5905	-.30	4.95	.5185	.2320	.2857	.0264	.72	4.95	.1770	-.20	4.10
36	.53	6.38	.3962	-.32	4.97	.3546	.2440	.2369	-.0219	.62	5.64	.3057	-.18	4.54
48	.60	6.51	.2524	-.35	4.98	.2147	.2462	.1644	-.0287	.54	5.97	.2228	-.19	4.74
60	.67	6.61	.1657	-.37	5.03	.0948	.2557	.1017	-.0213	.50	6.10	.2259	-.19	4.85
72	.73	6.68	.1097	-.40	5.05	.0714	.2550	.0600	.0062	.47	6.16	.2297	-.20	4.87

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 3
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	2.36	6.33	.2111	.27	4.98	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

										GIVEN X	GIVEN Y			
										2.74	.08			
DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	2.38	6.36	.8031	.20	4.99	.7053	.2063	.2766	.0697	2.66	3.72	.1318	.23	3.46
24	2.43	6.40	.6274	.14	4.97	.4963	.2071	.2794	-.0271	2.57	4.82	.1565	.29	4.23
36	2.48	6.43	.4404	.12	4.98	.3158	.2189	.2253	-.0741	2.49	5.57	.1938	.29	4.65
48	2.57	6.56	.3137	.10	5.01	.2036	.2239	.1611	-.0814	2.42	5.93	.2058	.28	4.84
60	2.64	6.64	.2236	.09	5.10	.1233	.2409	.0972	-.0886	2.38	6.10	.2143	.27	4.93
72	2.74	6.70	.1781	.06	5.13	.0576	.2426	.0677	-.0521	2.35	6.20	.2082	.27	4.96

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12958) – CAPE KENNEDY
MONTH OF RECORD – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 4
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.99	6.49	.2022	.38	5.19	930

GIVEN X = 4.35   GIVEN Y = .29

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	4.03	6.51	.8031	.29	5.19	.7262	.1990	.2889	.0644	4.25	3.81	.0929	.42	3.48
24	4.09	6.55	.6332	.23	5.18	.5245	.1988	.2759	-.0283	4.15	4.89	.1528	.44	4.32
36	4.16	6.56	.4805	.19	5.19	.3232	.2098	.2235	-.0752	4.06	5.57	.1820	.43	4.6:
48	4.25	6.61	.3686	.15	5.28	.2095	.2207	.1470	-.0910	4.00	5.93	.2005	.41	5.04
60	4.39	6.67	.2859	.15	5.38	.1336	.2381	.1019	-.0760	3.95	6.14	.2023	.39	5.13
72	4.52	6.77	.2264	.14	5.40	.0909	.2397	.0727	-.0714	3.92	6.26	.2037	.38	5.16

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD – OCTOBER   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 5   XP = U(AT T + DT)
ALPHA ANGLE – 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.67	6.83	.2566	.26	5.76	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
6.05	.27

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (X,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.74	6.82	.7954	.15	5.77	.7298	.2502	.3255	.1138	5.91	4.09	.1415	.38	3.84
24	5.81	6.84	.6401	.09	5.77	.5144	.2489	.2857	.0317	5.80	5.17	.2093	.38	4.85
36	5.90	6.85	.4999	.05	5.78	.3409	.2631	.2231	-.0142	5.71	5.83	.2336	.35	5.35
48	6.01	6.87	.3872	.02	5.90	.2116	.2740	.1509	-.0357	5.64	6.21	.2536	.31	5.60
60	6.16	6.92	.3079	-.00	5.98	.1311	.2907	.1067	-.0202	5.60	6.45	.2517	.28	5.69
72	6.33	7.05	.2528	-.01	6.01	.0814	.2944	.0775	-.0059	5.56	6.56	.2526	.27	5.73

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 6
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N					GIVEN X	GIVEN Y
	7.41	7.41	.2589	.31	6.46	930					7.80	.41

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	7.51	7.42	.8060	.21	6.48	.7163	.2573	.2998	.1295	7.63	4.34	.1748	.47	4.44
24	7.60	7.43	.6554	.15	6.53	.5131	.2543	.2691	.0421	7.51	5.51	.2250	.46	5.46
36	7.72	7.46	.5203	.11	6.57	.3322	.2656	.1926	-.0069	7.40	6.23	.2524	.41	6.04
48	7.87	7.49	.4184	.09	6.67	.2179	.2792	.1269	-.0297	7.32	6.63	.2693	.37	6.28
60	8.04	7.57	.3498	.07	6.77	.1477	.2932	.1176	-.0197	7.27	6.97	.2547	.33	6.36
72	8.22	7.71	.3031	.07	6.78	.1246	.3045	.1164	-.0041	7.24	7.02	.2487	.31	6.38

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD - 1/56 - .2/70
ALTITUDE (KM)   - 7
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
9.43	8.40	.2499	.27	7.40	930	9.82	.44

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	9.54	8.37	.7961	.20	7.46	.7159	.2527	.2957	.1393	9.64	5.05	.1391	.47	5.09
24	9.66	8.36	.6321	.14	7.54	.4883	.2510	.2599	.0555	9.50	6.44	.2003	.43	6.37
36	9.81	8.36	.5140	.10	7.61	.3252	.2614	.1857	.0180	9.38	7.13	.2368	.37	6.95
48	9.99	8.39	.4396	.10	7.76	.2320	.2749	.1521	.0026	9.30	7.48	.2407	.33	7.17
60	10.18	8.46	.3762	.10	7.90	.1791	.2947	.1465	.0098	9.24	7.73	.2329	.29	7.24
72	10.38	8.58	.3127	.12	7.91	.1488	.3025	.1472	.0013	9.21	7.93	.2311	.25	7.27

QUADRAVARIATE AND CONDITIONAL DIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — OCTOBER
PERIOD OF RECORD   — 1/56 — 12/70
ALTITUDE (KM)   — 8
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	11.77	9.40	.2493	.37	8.53	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	11.89	9.35	.8190	.30	8.63	.7300	.2509	.2735	.1517
24	12.02	9.33	.6655	.23	8.73	.4999	.2443	.2319	.0710
36	12.17	9.31	.5466	.19	8.80	.3403	.2525	.1797	.0259
48	12.39	9.35	.4580	.20	8.93	.2566	.2667	.1603	-.0011
60	12.61	9.41	.3900	.23	9.11	.2058	.2846	.1579	-.0012
72	12.84	9.53	.3337	.27	9.13	.1642	.2939	.1454	.0097

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	12.18	.58

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
11.93	5.37	.1636	.59	5.77
11.84	6.96	.2173	.55	7.32
11.72	7.79	.2403	.49	7.97
11.61	8.27	.2414	.44	8.20
11.54	8.58	.2333	.39	8.30
11.50	8.81	.2309	.35	8.37

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 9
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | **CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP**

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
14.15	10.74	.2389	.55	10.00	930	14.59	.78

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	14.28	10.69	.8316	.52	10.14	.7551	.2428	.2503	.1508	14.40	5.94	.1900	.76	6.52
24	14.40	10.67	.6815	.43	10.23	.5303	.2438	.2066	.0737	14.25	7.79	.2372	.74	8.44
36	14.57	10.67	.5625	.39	10.32	.3586	.2512	.1607	.0259	14.11	8.79	.2491	.68	9.26
48	14.82	10.72	.4728	.40	10.48	.2840	.2663	.1360	.0068	13.98	9.37	.2472	.63	9.56
60	15.07	10.74	.4106	.44	10.68	.2260	.2766	.1384	.0053	13.90	9.72	.2323	.58	9.70
72	15.33	10.86	.3667	.32	10.74	.1797	.2901	.1125	.0133	13.94	9.94	.2340	.54	9.81

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - OCTOBER   Y = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (.M)   - 10   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP · CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	16.40	12.00	.2173	.77	11.85	930		16.85	1.08

DT HR	MEAN XP	S.D. XP	R (X XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	16.56	11.95	.8452	.79	11.97	.7780	.2271	.2170	.1614	16.64	6.40	.1717	1.00	7.43
24	16.70	11.94	.7076	.73	12.03	.5593	.2307	.1668	.0896	16.49	8.43	.2167	.97	9.80
36	16.89	11.90	.5903	.67	12.17	.4001	.2355	.1640	.0444	16.34	9.61	.2141	.92	10.83
48	17.16	11.92	.4940	.69	12.35	.2971	.2469	.1586	.0232	16.20	10.36	.2023	.85	11.27
60	17.43	11.95	.4213	.75	12.62	.2392	.2566	.1479	.0244	16.11	10.83	.1985	.79	11.46
72	17.73	12.07	.3691	.79	12.70	.2115	.2701	.1409	.0313	16.05	11.12	.1974	.74	11.54

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 11
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
18.75	13.11	.1921	.67	13.39	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	18.93	13.04	.8573	.71	13.50	.7989	.2020	.1904	.1652
24	19.12	13.01	.7288	.65	13.60	.5933	.2031	.1683	.1134
36	19.37	12.99	.6143	.62	13.78	.4299	.2037	.1502	.0822
48	19.70	13.00	.5211	.64	13.99	.3239	.2168	.1543	.0525
60	20.00	13.00	.4433	.72	14.32	.2579	.2239	.1493	.0457
72	20.34	13.11	.3869	.76	14.44	.2274	.2392	.1386	.0434

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	19.12	.95

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
18.91	6.75	.1141	.87	8.04
18.74	8.96	.1631	.84	10.76
18.58	10.33	.1659	.79	12.06
18.41	11.16	.1622	.71	12.62
18.33	11.73	.1618	.63	12.88
18.25	12.07	.1663	.59	12.93

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858) – CAPE KENNEDY
MONTH OF RECORD – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 12
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	20.41	13.28	.2025	.46	14.12	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	20.63	13.23	.8687	.51	14.24	.8358	.2108	.1920	.1906
24	20.82	13.17	.7469	.51	14.33	.6481	.2115	.1738	.1466
36	21.06	13.12	.6350	.50	14.58	.4893	.2105	.1594	.1125
48	21.40	13.14	.5482	.51	14.78	.3701	.2227	.1810	.0906
60	21.72	13.15	.4675	.57	15.12	.2863	.2371	.1572	.0606
72	22.07	13.22	.4057	.62	15.23	.2424	.2465	.1464	.0591

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	20.64	.68

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
20.42	6.58	.1083	.60	7.75
20.28	8.80	.1584	.56	10.74
20.14	10.25	.1657	.51	12.29
19.93	11.10	.1620	.45	13.07
19.69	11.73	.1626	.37	13.46
19.81	12.13	.1724	.33	13.64

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 13
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	20.64	12.97	.2279	-.27	13.05	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	20.70	-.15

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	20.82	12.89	.8568	-.24	13.17	.8415	.2342	.2165	.2065	20.53	6.69	.1346	-.19	7.04
24	21.03	12.81	.7451	-.20	13.26	.6822	.2356	.1895	.1693	20.39	8.65	.1880	-.24	9.53
36	21.30	12.76	.6405	-.22	13.52	.5319	.2363	.1698	.1414	20.25	9.96	.1928	-.26	11.03
48	21.64	12.79	.5533	-.19	13.71	.4112	.2525	.1617	.1136	20.10	10.79	.1964	-.31	11.87
60	21.96	12.86	.4881	-.10	14.05	.3251	.2670	.1461	.0936	20.00	11.31	.2040	-.36	12.31
72	22.30	12.92	.4276	-.05	14.14	.2714	.2745	.1363	.0856	19.94	11.71	.2048	-.40	12.53

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 14
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	19.03	11.96	.2371	-.85	10.83	930		18.90	-.77

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	19.23	11.91	.8472	-.83	10.93	.8320	.2443	.2464	.1943	18.75	6.35	.1318	-.82	5.99
24	19.47	11.84	.7301	-.81	10.97	.6854	.2504	.2207	.1522	18.60	8.16	.1949	-.84	7.85
36	19.70	11.81	.6225	-.82	11.17	.5417	.2592	.1919	.1129	18.51	9.34	.2185	-.86	9.08
48	20.04	11.78	.5452	-.81	11.40	.4228	.2677	.1721	.0888	18.37	9.99	.2202	-.90	9.79
60	20.28	11.78	.4763	-.76	11.70	.3430	.2833	.1495	.0702	18.33	10.49	.2275	-.92	10.16
72	20.59	11.83	.4181	-.68	11.78	.2881	.2911	.1486	.0634	18.29	10.84	.2201	-.98	10.34

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 15
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
15.81	10.19	.2427	-.82	8.51	930	15.69	-.69

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	16.02	10.16	.8526	-.82	8.60	.8088	.2454	.2828	.1732	15.53	5.32	.0831	-.75	4.95
24	16.26	10.15	.7404	-.83	8.67	.6595	.2486	.2692	.1236	15.37	6.62	.1638	-.79	6.33
36	16.48	10.13	.6255	-.77	8.82	.5176	.2561	.2359	.0856	15.29	7.91	.1996	-.86	7.22
48	16.75	10.12	.5417	-.77	9.02	.4077	.2712	.2077	.0673	15.20	8.52	.2111	-.89	7.72
60	16.99	10.12	.4482	-.71	9.26	.3045	.2894	.1750	.0548	15.19	9.07	.2191	-.92	8.07
72	17.26	10.19	.3970	-.66	9.33	.2428	.3000	.1399	.0497	15.16	9.32	.2287	-.93	8.23

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 16
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	11.38	8.36	.2566	-.72	6.53	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	11.57	8.34	.6441	-.73	6.59	.7765	.2650	.3074	.1724
24	11.74	8.34	.7553	-.71	6.63	.6415	.2600	.2904	.1035
36	11.99	8.34	.6439	-.70	6.77	.4789	.2714	.2677	.0862
48	12.20	8.40	.5639	-.66	6.96	.3847	.2777	.2300	.0742
60	12.45	8.47	.4910	-.62	7.15	.2783	.3001	.1964	.0774
72	12.66	8.53	.4385	-.58	7.24	.2317	.3053	.1604	.0733

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	11.33	-.66

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
11.17	4.46	.1070	-.69	4.05
11.05	5.43	.1832	-.73	4.34
10.93	6.35	.1871	-.78	5.65
10.87	6.87	.2072	-.82	5.96
10.82	7.26	.2127	-.84	6.22
10.79	7.50	.2287	-.84	6.32

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 17
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
6.85	7.02	.2867	-.39	4.76	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	7.01	7.04	.8143	-.41	4.79	.6321	.2976	.3338	.2284
24	7.17	7.06	.7606	-.39	4.84	.5916	.2932	.3300	.1513
36	7.33	7.07	.6585	-.40	4.92	.3676	.2937	.3075	.1244
48	7.52	7.11	.5915	-.35	5.05	.3197	.2947	.2666	.0992
60	7.67	7.14	.5103	-.34	5.11	.1813	.3115	.2110	.1011
72	7.85	7.17	.4562	-.30	5.20	.1741	.3212	.1711	.0899

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X: 6.84   GIVEN Y: -.32

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
6.71	4.07	.0522	-.36	3.62
6.58	4.53	.1463	-.39	3.76
6.51	5.26	.1548	-.44	4.32
6.43	5.63	.1934	-.47	4.43
6.41	6.02	.2240	-.48	4.62
6.38	6.23	.2493	-.48	4.65

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869) - CAPE KENNEDY
MONTH OF RECORD - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 18
ALPHA ANGLE - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2.96	5.84	.2876	-.41	3.65	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	3.09	5.87	.7652	-.39	3.67	.4969	.2928	.2941	.1754
24	3.23	5.88	.7457	-.37	3.70	.5198	.2939	.3265	.1433
36	3.35	5.91	.6047	-.39	3.75	.2482	.2627	.2680	.0827
48	3.49	5.92	.5852	-.35	3.84	.2228	.2956	.2554	.1003
60	3.60	5.96	.4908	-.31	3.89	.0935	.2906	.2118	.0722
72	3.77	6.01	.4578	-.28	3.95	.0738	.2973	.2148	.0993

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X		GIVEN Y	
	3.00		-.42	
MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
2.89	3.75	.1540	-.43	3.12
2.79	3.87	.1436	-.45	3.05
2.75	4.62	.1837	-.46	3.45
2.68	4.72	.1933	-.48	3.48
2.67	5.07	.2195	-.48	3.56
2.61	5.16	.2175	-.51	3.56

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — OCTOBER
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 19
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	.12	5.00	.2016	—.45	3.11	930		.06	—.46

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.27	5.06	.7014	—.43	3.13	.2265	.2097	.2235	.1866	—.03	3.56	.0549	—.48	2.98
24	.41	5.10	.7213	—.42	3.16	.3938	.2258	.1850	.1054	—.13	3.45	.1418	—.49	2.84
36	.54	5.13	.6228	—.39	3.20	.1229	.2265	.1961	.1818	—.17	3.91	.1017	—.51	3.04
48	.66	5.18	.5658	—.37	3.28	.1660	.2427	.1544	.1159	—.21	4.12	.1452	—.51	3.04
60	.77	5.19	.4819	—.33	3.31	—.0317	.2345	.1621	.0988	—.21	4.38	.1412	—.52	3.06
72	.88	5.17	.4332	—.34	3.33	.0344	.2462	.0929	.0725	—.23	4.50	.1804	—.50	3.10

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — OCTOBER
PERICD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 20
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-1.68	4.61	.1544	-.31	2.85	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-1.55	4.66	.6546	-.33	2.96	.3071	.1586	.1373	.1051
24	-1.45	4.68	.7015	-.31	2.88	.3764	.1591	.1472	.1160
36	-1.35	4.71	.5661	-.31	2.89	.0855	.1548	.1035	.1062
48	-1.21	4.74	.5769	-.25	2.96	.1155	.1619	.0907	.0889
60	-1.09	4.76	.4813	-.25	3.07	-.0388	.1670	.0797	.1269
72	-.97	4.76	.4719	-.23	3.08	.0148	.1751	.0500	.1269

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-1.78	-.29

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-1.83	3.49	.0597	-.31	2.70
-1.91	3.29	.0754	-.32	2.63
-1.92	3.80	.1115	-.33	2.83
-2.00	3.77	.1236	-.34	2.82
-2.00	4.04	.1335	-.34	2.84
-2.05	4.06	.1433	-.34	2.85

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 21
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-2.65	4.32	.1694	-.39	2.70	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-2.53	4.35	.6272	-.38	2.70	.1013	.1641	.0597	.1185
24	-2.40	4.38	.6856	-.39	2.70	.3691	.1641	.1104	.1300
36	-2.28	4.43	.5527	-.40	2.71	.0356	.1675	.0630	.1049
48	-2.14	4.50	.5655	-.39	2.76	.1090	.1909	.0566	.1050
60	-2.05	4.55	.4937	-.37	2.83	-.0479	.1951	.0251	.0834
72	-1.90	4.63	.4747	-.36	2.79	-.0514	.1974	.0296	.0847

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-2.77	-.44

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-2.80	3.36	.1695	-.40	2.68
-2.90	3.14	.1294	-.41	2.51
-2.91	3.60	.1615	-.40	2.69
-2.93	3.56	.1681	-.40	2.68
-2.99	3.75	.1804	-.40	2.70
-3.03	3.80	.1763	-.40	2.69

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY              X  = U(AT T)
MONTH OF RECORD    - OCTOBER                   Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 22                        XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                      YP = V(AT T + DT)
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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N			GIVEN X		GIVEN Y	
	-3.26	4.36	.0642	-.52	2.81	930			-3.42		-.62	

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-3.13	4.37	.6531	-.50	2.80	.1906	.0654	.0455	.1264	-3.46	3.28	.0253	-.54	2.76
24	-2.97	4.43	.6986	-.51	2.83	.3368	.0802	.0777	.0530	-3.57	3.12	.0133	-.57	2.64
36	-2.83	4.47	.5935	-.50	2.81	.0988	.0656	.0159	.1130	-3.61	3.48	.0513	-.53	2.80
48	-2.70	4.56	.5893	-.53	2.81	.1194	.1049	.0025	.0854	-3.67	3.52	.0746	-.52	2.79
60	-2.58	4.58	.5061	-.49	2.93	-.0802	.1068	-.0203	.0954	-3.67	3.75	.0907	-.50	2.80
72	-2.46	4.63	.4814	-.50	2.83	-.0056	.1029	-.0349	.0985	-3.70	3.81	.0329	-.50	2.81

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 23
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-3.68	4.63	.0639	-.50	2.75	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-3.88	-.55

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-3.55	4.68	.6751	-.49	2.77	.1643	.0651	-.0305	.0852	•	-3.91	3.41	.1069	-.51	2.71
24	-3.37	4.72	.6782	-.50	2.77	.3065	.0692	.0280	.0786	•	-4.02	3.40	.0504	-.52	2.62
36	-3.21	4.78	.6123	-.51	2.77	.0287	.0806	-.0470	.0378	•	-4.08	3.66	.1157	-.49	2.74
48	-3.08	4.85	.5744	-.50	2.78	.0188	.0889	-.0492	.0502	•	-4.12	3.79	.1128	-.46	2.74
60	-2.92	4.91	.5020	-.48	2.80	-.0609	.1119	-.0740	.0548	•	-4.14	4.01	.1173	-.46	2.74
72	-2.79	4.96	.4733	-.48	2.82	-.0791	.1180	-.0862	.0105	•	-4.16	4.08	.1162	-.45	2.73

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 24
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-3.72	4.86	.0535	-.46	2.78	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-3.80	-.45

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-3.57	4.91	.7291	-.46	2.77	.1999	.0557	.0230	.0855	-3.89	3.32	.0416	-.46	2.72
24	-3.38	4.96	.7406	-.44	2.79	.2704	.0576	.0287	.0751	-4.02	3.26	.0364	-.47	2.67
36	-3.22	5.03	.6389	-.43	2.79	.0095	.0687	-.0421	.0911	-4.07	3.73	.1041	-.45	2.77
48	-3.06	5.13	.6045	-.41	2.81	.0151	.0789	-.0449	.0797	-4.14	3.87	.1007	-.43	2.76
60	-2.91	5.20	.5323	-.39	2.82	-.0881	.1010	-.0730	.0818	-4.16	4.11	.1126	-.43	2.76
72	-2.74	5.25	.5082	-.38	2.84	-.0776	.1038	-.0831	.0753	-4.22	4.19	.1137	-.42	2.76

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12855)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 25
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-3.39	5.21	.0845	-.55	2.92	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-3.37	-.51

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-3.21	5.30	.7555	-.55	2.91	.2624	.0854	.0498	.1182	-3.50	3.40	.0523	-.54	2.82
24	-3.01	5.39	.7406	-.54	2.93	.3054	.1077	.0455	.1197	-3.64	3.50	.0606	-.54	2.78
36	-2.82	5.49	.6602	-.51	2.95	.0541	.1325	-.0123	.1526	-3.73	3.90	.1191	-.54	2.91
48	-2.63	5.59	.6251	-.48	2.98	.0608	.1511	-.0082	.1278	-3.82	4.07	.1125	-.54	2.91
60	-2.45	5.71	.5731	-.45	3.02	-.0928	.1761	-.0353	.1585	-3.87	4.26	.1351	-.53	2.91
72	-2.27	5.75	.5331	-.46	3.06	-.0738	.1783	-.0230	.1531	-3.92	4.40	.1199	-.54	2.91

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 25
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-2.75	5.83	.1502	-.64	3.06	930	-2.56	-.71

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-2.55	5.83	.6051	-.59	3.04	.2128	.1529	.0985	.1765	-2.77	3.44	.1045	-.67	2.98
24	-2.31	5.98	.7859	-.60	3.07	.2779	.1654	.1254	.1380	-2.94	3.59	.0841	-.68	2.93
36	-2.13	6.03	.7209	-.59	3.10	.0484	.1902	.0603	.1581	-3.05	4.04	.1534	-.66	3.05
48	-1.91	6.20	.6720	-.55	3.14	.0733	.2098	.0523	.1591	-3.16	4.31	.1545	-.67	3.05
60	-1.69	6.31	.6213	-.53	3.17	-.0583	.2141	.0416	.1393	-3.24	4.56	.1599	-.66	3.05
72	-1.47	6.39	.5906	-.54	3.23	.0105	.2036	.0221	.0933	-3.33	4.70	.1703	-.66	3.06

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 27
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.96	6.15	.1192	-.76	3.23	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-1.71	6.25	.7940	-.71	3.21	.2054	.1260	.0481	.1065
24	-1.49	6.41	.7912	-.71	3.22	.3129	.1441	.0750	.1279
36	-1.25	6.55	.7321	-.68	3.26	.0301	.1591	.0262	.1358
48	-1.01	6.66	.6847	-.67	3.33	.0826	.1728	.0359	.1455
60	-.79	6.78	.6149	-.65	3.34	-.0348	.1624	-.0084	.1371
72	-.57	6.89	.5806	-.68	3.39	.0039	.1474	.0060	.1034

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-2.33	-.89

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-2.44	3.75	.1340	-.81	3.16
-2.60	3.77	.0957	-.83	3.06
-2.70	4.20	.1463	-.78	3.22
-2.80	4.49	.1274	-.80	3.21
-2.82	4.85	.1596	-.75	3.22
-2.88	5.02	.1421	-.77	3.23

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) – CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
10	1/56 - 12/70	0	90.0	-1.15	3.18	.0349	-1.18	2.89	930
10	1/56 - 12/70	1	90.0	-2.02	6.02	.1913	-1.15	5.14	930
10	1/56 - 12/70	2	90.0	.46	6.20	.2327	-.21	4.89	930
10	1/56 - 12/70	3	90.0	2.36	6.33	.2111	.27	4.98	930
10	1/56 - 12/70	4	90.0	3.99	6.49	.2022	.38	5.19	930
10	1/56 - 12/70	5	90.0	5.67	6.83	.2566	.26	5.76	930
10	1/56 - 12/70	6	90.0	7.41	7.41	.2599	.31	6.46	930
10	1/56 - 12/70	7	90.0	9.43	8.40	.2499	.27	7.40	930
10	1/56 - 12/70	8	90.0	11.77	9.40	.2493	.37	8.53	930
10	1/56 - 12/70	9	90.0	14.15	10.74	.2383	.55	10.03	930
10	1/56 - 12/70	10	90.0	16.40	12.00	.2173	.77	11.85	930
10	1/56 - 12/70	11	90.0	18.75	13.11	.1921	.67	13.39	930
10	1/56 - 12/70	12	90.0	20.41	13.28	.2025	.46	14.12	930
10	1/56 - 12/70	13	90.0	20.64	12.97	.2279	-.27	13.05	930
10	1/56 - 12/70	14	90.0	19.03	11.96	.2371	-.85	10.83	930
10	1/56 - 12/70	15	90.0	15.81	10.19	.2427	-.82	8.51	930
10	1/56 - 12/70	16	90.0	11.39	8.36	.2566	-.72	6.53	930
10	1/56 - 12/70	17	90.0	6.65	7.02	.2857	-.39	4.76	930
10	1/56 - 12/70	18	90.0	2.96	5.84	.2976	-.41	3.65	930
10	1/56 - 12/70	19	90.0	.12	5.00	.2016	-.45	3.11	930
10	1/56 - 12/70	20	90.0	-1.68	4.61	.1544	-.31	2.85	930
10	1/56 - 12/70	21	90.0	-2.65	4.32	.1694	-.39	2.70	930
10	1/56 - 12/70	22	90.0	-3.26	4.35	.0642	-.52	2.81	930
10	1/56 - 12/70	23	90.0	-3.68	4.63	.0639	-.50	2.75	930
10	1/56 - 12/70	24	90.0	-3.72	4.86	.0535	-.46	2.78	930
10	1/56 - 12/70	25	90.0	-3.39	5.21	.0845	-.55	2.92	930
10	1/56 - 12/70	26	90.0	-2.75	5.83	.1502	-.64	3.06	930
10	1/56 - 12/70	27	90.0	-1.96	6.16	.1192	-.76	3.23	930

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 0
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.04	2.90	-.2098	-1.11	2.82	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.10	-1.16

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.09	2.91	.5329	-1.13	2.82	.5071	-.2061	.0918	-.2953	-.05	2.40	-.2269	-1.16	2.36
24	.10	2.93	.4102	-1.16	2.81	.2690	-.2126	.1710	-.2371	-.03	2.61	-.2763	-1.16	2.64
36	.09	2.94	.1626	-1.18	2.82	.0727	-.2122	.1665	-.1101	.01	2.86	-.2410	-1.15	2.75
48	.07	2.94	.1197	-1.19	2.82	-.0109	-.2176	.1509	-.0442	.02	2.89	-.2318	-1.14	2.79
60	.06	2.92	-.0120	-1.18	2.83	-.0237	-.2193	.0769	.0474	.04	2.90	-.2094	-1.12	2.81
72	.06	2.90	.0374	-1.16	2.84	.0036	-.2107	.0109	.0549	.03	2.89	-.2114	-1.11	2.82

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 1
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.18	6.87	.1475	-.66	5.34	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.32	-.78

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.25	6.88	.7437	-.70	5.33	.6636	.1395	.3397	-.1231	-.24	4.31	-.0214	-.85	3.63
24	.24	6.89	.4983	-.74	5.33	.7475	.1313	.4020	-.1601	-.10	5.79	.0252	-.84	4.62
36	.18	6.88	.3144	-.77	5.33	.1396	.1273	.3194	-.0939	.01	6.45	.0683	-.78	5.03
48	.11	6.86	.2143	-.79	5.33	.0144	.1174	.2004	-.0157	.08	6.70	.1089	-.73	5.23
60	.08	6.82	.1671	-.78	5.33	-.0039	.1117	.1106	.0549	.11	6.77	.1326	-.70	5.30
72	.07	6.78	.1454	-.75	5.33	.0348	.1126	.0501	.1129	.12	6.76	.1384	-.68	5.33

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - NOVEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 2   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP |

GUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
2.84	7.32	.1798	-.18	5.34	900		2.34	-.32

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	2.95	7.33	.7696	-.18	5.29	.6229	.1685	.3721	-.0666	2.39	4.44	.0148	-.38	3.92
24	3.02	7.35	.5589	-.24	5.30	.3446	.1554	.3660	-.1183	2.47	5.88	.0504	-.36	4.72
36	2.98	7.32	.3870	-.29	5.27	.1311	.1478	.2980	-.0924	2.59	6.67	.0383	-.32	5.07
48	2.95	7.23	.2680	-.32	5.24	.0163	.1454	.1893	-.0164	2.67	7.04	.1359	-.27	5.24
60	2.91	7.15	.1904	-.32	5.19	-.0260	.1352	.0967	.0528	2.73	7.19	.1665	-.22	5.31
72	2.92	7.12	.1681	-.31	5.16	.0008	.1327	.0322	.1057	2.75	7.19	.1779	-.20	5.34

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869)   – CAPE KENNEDY
MONTH OF RECORD   – NOVEMBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 3
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.47	7.69	.1970	-.17	5.66	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.84	-.35

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	5.59	7.73	.7755	-.17	5.66	.6292	.1955	.3773	-.0294	4.91	4.84	.0202	-.42	4.14
24	5.67	7.76	.5858	-.21	5.66	.3383	.1895	.3864	-.0527	5.00	6.08	.0264	-.41	4.99
36	5.69	7.74	.4164	-.27	5.64	.1607	.1839	.3047	-.0158	5.12	6.95	.0936	-.36	5.35
48	5.66	7.66	.3105	-.30	5.61	.0717	.1790	.2025	.0442	5.22	7.31	.1447	-.29	5.54
60	5.69	7.59	.2422	-.33	5.51	.0510	.1705	.1431	.0873	5.27	7.45	.1680	-.26	5.60
72	5.70	7.56	.1891	-.31	5.50	.0443	.1714	.0770	.0644	5.31	7.55	.1855	-.22	5.64

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858) — CAPE KENNEDY
MONTH OF RECORD — NOVEMBER
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM)   — 4
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
7.82	8.00	.2164	-.25	6.31	900		7.26	-.48

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	7.94	8.06	.7926	-.26	6.34	.6339	.2117	.3957	.0208	7.30	4.73	-.0100	-.52	4.60
24	8.04	8.09	.5914	-.29	6.34	.3479	.2119	.3824	-.0265	7.38	6.33	.0468	-.50	5.57
36	8.10	8.08	.4136	-.34	6.31	.1799	.2072	.2932	-.0027	7.47	7.25	.1235	-.44	5.98
48	8.14	8.05	.2871	-.35	6.21	.0781	.2032	.1974	.0553	7.57	7.66	.1703	-.39	6.18
60	8.14	8.01	.2072	-.39	6.13	.0339	.1976	.1253	.0674	7.64	7.82	.1959	-.34	6.26
72	8.14	7.96	.1509	-.38	6.12	.0039	.2001	.0692	.0590	7.69	7.91	.2030	-.30	6.30

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — NOVEMBER
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 5
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	10.40	8.73	.2569	-.27	7.00	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	10.55	8.83	.7785	-.25	7.03	.6664	.2594	.4019	.0537
24	10.68	8.89	.5746	-.26	7.01	.4103	.2514	.3937	-.0076
36	10.77	8.89	.4069	-.33	6.99	.2481	.2593	.2959	-.0007
48	10.82	8.89	.2711	-.33	6.87	.1260	.2599	.2100	.0358
60	10.83	8.84	.1871	-.35	6.78	.0740	.2573	.1320	.0645
72	10.82	8.80	.1281	-.36	6.76	.0486	.2537	.0651	.0739

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	9.95	-.63

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
9.99	5.32	.0787	-.61	4.94
10.04	7.00	.1239	-.56	6.05
10.09	7.92	.1633	-.48	6.57
10.18	8.40	.2160	-.42	6.83
10.24	8.58	.2380	-.35	6.94
10.29	8.65	.2502	-.32	6.98

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - NOVEMBER
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 6
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	13.12	9.62	.3025	-.23	7.95	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
12.63	-.57

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	P (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	13.27	9.68	.7769	-.21	7.99	.7107	.3040	.4034	.0987	12.66	5.90	.1889	-.57	5.37
24	13.43	9.75	.5712	-.24	7.95	.4623	.3116	.3690	.0235	12.69	7.74	.2199	-.52	6.80
36	13.54	9.74	.4167	-.31	7.90	.3144	.3114	.2347	.0229	12.75	8.68	.2465	-.45	7.37
48	13.53	9.72	.2764	-.32	7.80	.2104	.3116	.2135	.0392	12.85	9.24	.2710	-.40	7.67
60	13.60	9.67	.1894	-.34	7.73	.1281	.3075	.1414	.0609	12.94	9.45	.2846	-.34	7.84
72	13.61	9.61	.1269	-.36	7.70	.0896	.3066	.0694	.0729	13.00	9.54	.2952	-.28	7.91

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12863) - CAPE KENNEDY
MONTH OF RECORD - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 7
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
15.89	10.26	.3124	-.27	9.12	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
15.42	-.61

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	16.08	10.37	.8073	-.29	9.13	.7186	.3166	.3333	.1457	15.38	5.93	.1730	-.53	6.14
24	16.25	10.46	.6013	-.32	9.06	.4910	.3242	.3493	.0681	15.41	8.08	.2335	-.55	7.73
36	16.37	10.49	.4354	-.37	9.00	.3414	.3255	.2892	.0378	15.49	9.16	.2616	-.50	8.40
48	16.48	10.50	.2960	-.39	8.86	.2404	.3236	.2228	.0300	15.59	9.77	.2834	-.46	8.74
60	16.52	10.48	.1994	-.44	8.74	.1547	.3196	.1527	.0437	15.67	10.05	.2955	-.40	8.96
72	16.54	10.42	.1311	-.46	8.72	.1021	.3181	.0652	.0587	15.75	10.17	.3044	-.34	9.06

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 8
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	18.90	11.18	.3210	-.44	10.47	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	19.10	11.35	.8014	-.48	10.46	.7293	.3273	.3809	.1741
24	19.31	11.48	.6045	-.51	10.40	.5090	.3347	.3338	.0932
36	19.46	11.53	.4449	-.54	10.34	.3739	.3356	.2694	.0565
48	19.59	11.56	.3137	-.57	10.21	.2774	.3330	.2165	.0405
60	19.67	11.54	.2250	-.63	10.05	.1895	.3320	.1486	.0318
72	19.69	11.49	.1514	-.67	10.01	.1176	.3289	.0832	.0384

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	18.31	-.85

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
18.29	6.61	.1916	-.81	6.98
18.31	8.81	.2525	-.76	8.83
18.40	9.95	.2834	-.71	9.58
18.51	10.59	.2972	-.67	9.96
18.59	10.88	.3092	-.60	10.24
18.69	11.05	.3150	-.53	10.38

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD - NOVEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 9   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                  •   FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	21.89	12.13	.3635	-.27	11.81	900		21.28	-.74

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	22.10	12.30	.8082	-.34	11.74	.7560	.3733	.3972	.2266	21.24	7.07	.2550	-.66	7.59
24	22.36	12.44	.6116	-.35	11.67	.5392	.3792	.3371	.1208	21.25	9.48	.3247	-.62	9.80
36	22.54	12.54	.4599	-.38	11.58	.4099	.3810	.2911	.0627	21.32	10.70	.3298	-.59	10.63
48	22.69	12.58	.3460	-.40	11.45	.3234	.3793	.2507	.0746	21.41	11.35	.3331	-.56	11.05
60	22.81	12.60	.2554	-.44	11.31	.2196	.3946	.1833	.0573	21.50	11.71	.3459	-.49	11.45
72	22.83	12.55	.1963	-.50	11.26	.1441	.3812	.1344	.0531	21.53	11.89	.3513	-.43	11.64

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD – NOVEMBER   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 10   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP · CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	24.84	13.28	.3938	-.31	13.35	900		24..?	-.86

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	·	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	25.07	13.48	.8067	-.40	13.29	.7841	.4010	.4030	.2852	·	24.08	7.83	.2663	-.75	8.19
24	25.36	13.63	.6238	-.41	13.22	.5837	.4052	.3465	.1828	·	24.08	10.33	.3438	-.71	10.72
36	25.55	13.76	.4732	-.44	13.12	.4480	.4102	.3046	.1440	·	24.17	11.63	.3464	-.68	11.81
48	25.74	13.85	.3699	-.42	12.96	.3491	.4113	.2616	.1354	·	24.26	12.33	.3501	-.67	12.33
60	25.84	13.83	.2842	-.50	12.76	.2469	.4172	.1970	.1084	·	24.37	12.73	.3679	-.57	12.97
72	25.88	13.77	.2274	-.55	12.70	.1696	.4132	.1467	.0779	·	24.45	12.93	.3792	-.51	13.11

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – NOVEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 11
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
27.83	13.80	.3865	-.45	14.85	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	28.10	14.09	.8191	-.59	14.79	.8088	.3912	.3761	.3058
24	28.36	14.26	.6424	-.60	14.74	.6221	.3971	.3375	.2142
36	28.53	14.36	.4979	-.63	14.56	.4762	.4055	.3001	.1639
48	29.69	14.43	.3397	-.63	14.38	.3820	.4067	.2645	.1556
60	28.78	14.43	.3199	-.74	14.13	.2783	.4140	.2176	.1382
72	28.80	14.36	.2616	-.81	14.04	.1938	.4115	.1693	.0324

CONDITIONAL BIVARIATE NORMAL STATISTICS
FOR XP AND YP

	GIVEN X	GIVEN Y
	26.93	-1.10

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
26.89	7.91	.2683	-.94	8.68
26.94	10.56	.3254	-.91	11.54
27.06	11.96	.3330	-.87	12.93
27.16	12.66	.3370	-.85	13.61
27.27	13.09	.3492	-.77	14.17
27.35	13.32	.3658	-.71	14.50

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – NOVEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 12
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT)
YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	29.90	14.03	.4052	-.68	15.47	900	29.02	-1.43

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	30.12	14.25	.8251	-.80	15.39	.8164	.4069	.3832	.3308	29.00	7.93	.2853	-1.25	8.89
24	30.43	14.45	.6432	-.86	15.34	.6351	.4110	.3353	.2316	29.02	10.73	.3550	-1.16	11.88
36	30.63	14.53	.5042	-.86	15.14	.4905	.4235	.3048	.1763	29.11	12.10	.3592	-1.14	13.38
48	30.78	14.56	.4134	-.84	14.94	.3921	.4249	.2631	.1349	29.19	12.76	.3708	-1.12	14.12
60	30.90	14.57	.3272	-.94	14.64	.2896	.4321	.2350	.1015	29.29	13.24	.3767	-1.07	14.69
72	30.94	14.53	.2692	-1.00	14.58	.1907	.4259	.1830	.0598	29.38	13.48	.3878	-1.00	15.09

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – NOVEMBER   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 13   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
30.24	13.15	.3793	-.46	14.16	900	29.30	-1.64

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	30.49	13.29	.8104	-.52	14.11	.8389	.3872	.3755	.3047	29.29	7.70	.2597	-1.45	7.67
24	30.73	13.44	.6206	-.58	14.04	.6843	.3965	.3373	.2299	29.38	10.31	.3174	-1.27	10.27
36	30.92	13.52	.4934	-.59	13.81	.5422	.4038	.3057	.1730	29.47	11.43	.3328	-1.17	11.82
48	31.05	13.49	.3897	-.56	13.62	.4292	.4060	.2655	.1259	29.59	12.10	.3489	-1.09	12.71
60	31.15	13.43	.3152	-.65	13.27	.3139	.4102	.2274	.0960	29.68	12.47	.3537	-.97	13.35
72	31.23	13.40	.2593	-.71	13.23	.2099	.4043	.1694	.0608	29.76	12.68	.3651	-.83	13.78

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – NOVEMBER   Y = V(AT T)
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 14   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	28.33	11.84	.3742	-.65	11.90	900		27.26	-1.44

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	28.57	12.09	.8044	-.72	11.85	.8256	.3812	.3975	.2994	27.30	7.03	.1818	-1.34	6.63
24	28.79	12.25	.6528	-.77	11.79	.6750	.3872	.3761	.2280	27.37	8.96	.2617	-1.27	8.65
36	28.99	12.34	.5151	-.79	11.61	.5418	.3866	.3140	.1690	27.48	10.14	.3187	-1.18	9.91
48	29.11	12.40	.4063	-.76	11.38	.4280	.3893	.2836	.1278	27.61	10.81	.3309	-1.16	10.65
60	29.32	12.39	.3141	-.83	11.09	.3205	.3905	.2461	.0876	27.71	11.23	.3441	-1.10	11.16
72	29.41	12.35	.2436	-.93	11.02	.2134	.3841	.2026	.0549	27.82	11.47	.3528	-1.03	11.52

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – NOVEMBER   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 15   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
24.47	9.90	.3551	-.42	9.68	900		23.46	-1.14

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	24.65	10.06	.7951	-.45	9.62	.8096	.3620	.4131	.2509	23.55	5.99	.1578	-1.11	5.55
24	24.84	10.24	.6549	-.46	9.56	.6645	.3692	.3804	.1770	23.61	7.45	.2635	-1.04	7.10
36	25.01	10.32	.5260	-.52	9.43	.5246	.3705	.3293	.1243	23.69	8.38	.3020	-.94	8.12
48	25.14	10.34	.4287	-.54	9.25	.4091	.3645	.2838	.0916	23.78	8.92	.3128	-.83	8.71
60	25.30	10.34	.3386	-.62	9.00	.2858	.3611	.2508	.0467	23.86	9.28	.3241	-.83	9.15
72	25.39	10.28	.2599	-.69	8.95	.1756	.3541	.2024	.0141	23.97	9.52	.3331	-.77	9.42

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – NOVEMBER   Y = V(AT T)
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 16   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP									CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N					GIVEN X	GIVEN Y		
	20.01	8.48	.3104	-.42	8.07	900					19.02	-1.04		
DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	20.19	8.57	.7766	-.44	8.04	.8077	.3130	.3538	.1894	19.13	5.32	.2141	-1.01	4.68
24	20.40	8.60	.6449	-.44	8.00	.6604	.3240	.3478	.1213	19.16	6.44	.2498	-.99	5.95
36	20.53	8.63	.5277	-.49	7.89	.5042	.3273	.3169	.0521	19.24	7.12	.2763	-.91	6.84
48	20.65	8.62	.4261	-.50	7.76	.3856	.3280	.2635	.0334	19.34	7.62	.2831	-.84	7.35
60	20.74	8.56	.3422	-.55	7.53	.2627	.3179	.2169	.0016	19.43	7.91	.2912	-.77	7.70
72	20.86	8.51	.2858	-.57	7.54	.1633	.3134	.1569	-.0175	19.48	8.07	.2932	-.69	7.91

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 17
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

		QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP								CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N					GIVEN X	GIVEN Y		
	15.06	7.43	.2043	-.43	6.74	900					14.27	-.83		
DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	15.24	7.52	.7494	-.43	6.76	.7491	.2120	.3024	.1095	14.35	4.90	.0308	-.85	4.36
24	15.40	7.53	.6250	-.44	6.73	.6062	.2193	.3098	.0532	14.39	5.76	.0957	-.84	5.22
36	15.58	7.56	.5349	-.47	6.68	.4572	.2286	.2678	.0293	14.38	6.23	.1363	-.78	5.83
48	15.73	7.59	.4399	-.49	6.60	.3337	.2336	.2150	-.0045	14.44	6.62	.1718	-.72	6.27
60	15.89	7.58	.3698	-.53	6.56	.2128	.2283	.1699	-.0258	14.47	6.85	.1810	-.67	6.53
72	16.06	7.55	.3230	-.55	6.53	.1284	.2196	.1300	-.0282	14.48	6.99	.1861	-.63	6.65

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – NOVEMBER
PERIOD OF RECORD · 1/56 – 12/70
ALTITUDE (KM)   – 18
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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| | | QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | | • | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP | | | | |

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N			•		GIVEN X	GIVEN Y		
	10.01	6.51	.1792	-.41	5.13	900			•		8.54	-.78		

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	10.18	6.57	.7135	-.40	5.19	.6978	.1927	.2440	.0658	8.86	4.54	.1073	-.81	3.63
24	10.33	6.61	.6378	-.42	5.18	.6144	.2000	.2515	.0251	8.89	4.97	.1330	-.81	3.99
36	10.46	6.61	.5311	-.43	5.17	.4725	.2012	.2616	-.0147	9.01	5.46	.1289	-.82	4.44
48	10.66	6.63	.4541	-.48	5.12	.3476	.2132	.2174	-.0413	9.06	5.73	.1523	-.75	4.75
60	10.79	6.60	.3603	-.53	5.10	.2469	.2168	.1959	-.0407	9.19	6.02	.1514	-.72	4.92
72	10.92	6.57	.3149	-.56	5.09	.1468	.2056	.1399	-.0456	9.24	6.14	.1606	-.65	5.04

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - NOVEMBER   Y = V(AT T)
PERICD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 19   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	6.44	5.67	.1853	-.17	4.09	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
6.16	-.44

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	6.52	5.72	.6720	-.19	4.11	.6030	.1822	.2008	.1140	6.20	4.20	.0982	-.34	3.24
24	6.65	5.73	.6320	-.21	4.10	.5921	.1915	.1672	.0556	6.14	4.39	.1790	-.32	3.29
36	6.75	5.73	.5246	-.23	4.08	.4096	.1908	.1691	.0545	6.14	4.82	.1483	-.29	3.71
48	6.88	5.73	.4576	-.28	4.02	.3425	.1664	.1361	.0371	6.12	5.04	.1670	-.26	3.83
60	7.00	5.73	.3701	-.32	4.00	.2259	.1962	.1093	.0178	6.13	5.26	.1740	-.23	3.97
72	7.14	5.71	.3188	-.35	4.01	.1777	.1887	.0755	.0035	6.12	5.37	.1837	-.22	4.02

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858) - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD - NOVEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 20   XP = U(AT T + DT)
ALPHA ANGLE - 90.0   YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP									CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N				GIVEN X	GIVEN Y			
	4.19	5.32	.1609	-.12	3.42	900				4.05	-.27			

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	4.26	5.32	.6567	-.11	3.42	.4578	.1623	.1256	.0931	4.06	4.01	.1222	-.20	3.04
24	4.39	5.37	.6348	-.12	3.43	.5070	.1784	.1229	.0799	3.99	4.11	.1488	-.20	2.95
36	4.50	5.35	.5257	-.12	3.42	.3174	.1665	.1231	.0526	3.97	4.52	.1369	-.19	3.24
48	4.59	5.36	.4700	-.18	3.36	.2967	.1872	.0763	.0298	3.95	4.68	.1690	-.16	3.27
60	4.68	5.40	.4145	-.18	3.27	.1493	.1865	.0686	.0216	3.94	4.83	.1566	-.15	3.38
72	4.79	5.43	.3597	-.21	3.27	.1519	.1983	.0719	-.0068	3.93	4.94	.1593	-.15	3.38

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – NOVEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 21
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

* *

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	3.37	5.53	.2279	-.02	3.10	900	3.93	-.86

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	3.43	5.55	.7034	.00	3.15	.4314	.2472	.2137	.2004	3.67	3.93	.1051	-.33	2.78
24	3.50	5.58	.6934	.02	3.14	.5064	.2548	.1648	.1830	3.65	3.98	.1779	-.44	2.67
36	3.59	5.58	.5794	.03	3.13	.3127	.2593	.1447	.1836	3.50	4.50	.1737	-.27	2.94
48	3.70	5.58	.5525	.02	3.10	.2965	.2554	.1217	.1575	3.47	4.61	.1962	-.27	2.96
60	3.81	5.58	.4727	-.00	3.09	.1443	.2549	.1017	.1215	3.42	4.87	.2065	-.13	3.06
72	3.86	5.57	.4526	-.00	3.11	.1418	.2542	.0989	.0800	3.46	4.93	.2130	-.13	3.06

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12853) - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD - NOVEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 22   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	3.16	5.95	.2189	.07	3.27	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	3.19	.10

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	3.28	6.01	.7662	.09	3.30	.4417	.2229	.1885	.1896	3.10	3.82	.1186	.07	2.92
24	3.35	6.05	.7161	.10	3.29	.5201	.2280	.2033	.1792	3.05	4.15	.1100	.07	2.78
36	3.45	6.04	.6306	.10	3.28	.3118	.2357	.1678	.1477	3.00	4.62	.1544	.06	3.09
48	3.54	6.03	.5953	.10	3.28	.2297	.2326	.1155	.1090	2.95	4.78	.2005	.06	3.17
60	3.64	6.05	.5185	.08	3.27	.1432	.2325	.0908	.0913	2.93	5.08	.2156	.07	3.23
72	3.73	6.09	.4853	.09	3.27	.1131	.2342	.0641	.0539	2.90	5.19	.2239	.06	3.24

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – NOVEMBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 23
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
3.72	6.43	.2058	.34	3.21	900	3.80	.36

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	3.80	6.44	.8012	.34	3.21	.4337	.2096	.1852	.1959	3.72	3.84	.0857	.35	2.88
24	3.90	6.49	.7653	.36	3.19	.4897	.2045	.1685	.1545	3.65	4.14	.1391	.33	2.79
36	3.99	6.53	.6885	.39	3.19	.2639	.2087	.1526	.1365	3.60	4.67	.1466	.32	3.08
48	4.10	6.57	.6457	.39	3.18	.2193	.2026	.0856	.0782	3.54	4.90	.2177	.33	3.13
60	4.19	6.64	.5894	.38	3.16	.0733	.1911	.0527	.0353	3.50	5.17	.2245	.33	3.20
72	4.29	6.65	.5441	.38	3.13	.0188	.1803	.0540	.0003	3.46	5.36	.2132	.33	3.21

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12858)    - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD    - NOVEMBER              Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 24                    XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                  YP = V(AT T + DT)
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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						•	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP		

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
4.81	6.99	.1953	.45	3.31	900	•	4.84	.47

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	4.88	7.00	.8154	.45	3.32	.4544	.1972	.1901	.1840	•	4.77	4.04	.0589	.46	2.93
24	4.98	7.04	.7756	.45	3.32	.4390	.1834	.1634	.1703	•	4.70	4.41	.1039	.45	2.96
36	5.11	7.08	.7142	.48	3.33	.2067	.1842	.1755	.1210	•	4.62	4.83	.1061	.43	3.20
48	5.22	7.14	.6639	.49	3.32	.1973	.1848	.1665	.0901	•	4.56	5.19	.1237	.43	3.22
60	5.33	7.20	.6113	.50	3.31	.0487	.1835	.1235	.0598	•	4.52	5.52	.1547	.43	3.28
72	5.44	7.24	.5640	.51	3.28	.0194	.1830	.0932	.0276	•	4.48	5.74	.1746	.43	3.29

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869) — CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD — NOVEMBER   Y = V(AT T)
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 25   XP = U(AT T + DT)
ALPHA ANGLE   — 90.0   YP = V(AT T + DT)

• •

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS
                                              •   FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
	6.38	7.76	.2359	.37	3.77	900	•	6.31	.40

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	6.46	7.79	.8459	.39	3.79	.4561	.2355	.2028	.2178	•	6.25	4.14	.1195	.36	3.33
24	6.57	7.83	.8106	.40	3.79	.4314	.2158	.1907	.2009	•	6.18	4.54	.1348	.35	3.38
36	6.67	7.85	.7526	.42	3.79	.2569	.2155	.1515	.1544	•	6.11	5.11	.1955	.34	3.62
48	6.80	7.92	.6328	.41	3.78	.1676	.2123	.1396	.1487	•	6.05	5.60	.1967	.34	3.69
60	6.91	7.94	.6502	.42	3.77	.0574	.2090	.1181	.1053	•	6.00	5.89	.2126	.33	3.74
72	7.04	7.95	.6174	.43	3.74	.0561	.1985	.0953	.0644	•	5.94	6.09	.2298	.33	3.75

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — NOVEMBER
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM) — 26
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
7.91	8.25	.2332	.31	3.94	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
7.84	.33

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	8.02	8.32	.8557	.33	3.98	.5662	.2251	.2161	.2266	7.76	4.25	.0703	.30	3.23
24	8.08	8.35	.8038	.36	3.98	.5051	.2066	.1973	.1957	7.72	4.90	.1181	.28	3.38
36	8.20	8.35	.7489	.37	3.98	.3378	.1990	.1698	.1708	7.64	5.47	.1612	.28	3.69
48	8.32	8.43	.6967	.36	3.97	.2714	.1914	.1434	.1232	7.58	5.92	.1978	.27	3.78
60	8.42	8.47	.6402	.40	3.98	.1238	.1897	.1536	.0909	7.55	6.33	.1826	.26	3.88
72	8.52	8.53	.5959	.43	3.96	.0801	.1840	.1356	.0738	7.52	6.62	.1947	.26	3.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12668)   - CAPE KENNEDY
MONTH OF RECORD   - NOVEMBER
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 27
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

• •

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X		GIVEN Y	
	9.42	8.88	.1622	.52	4.04	900		9.57		.98	

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	9.46	8.94	.8723	.55	4.06	.5858	.1496	.1579	.1487	9.53	4.34	.0355	.77	3.26
24	9.51	8.99	.8192	.56	4.09	.5360	.1287	.1492	.1105	9.47	5.11	.0774	.74	3.40
36	9.60	9.02	.7475	.57	4.09	.3784	.1216	.1259	.0680	9.39	5.90	.1129	.67	3.73
48	9.68	9.06	.6942	.59	4.07	.3000	.1229	.1239	.0656	9.33	6.47	.1195	.63	3.84
60	9.80	9.13	.6330	.64	4.07	.1724	.1277	.1204	.0329	9.24	6.85	.1237	.57	3.96
72	9.89	9.20	.5880	.72	4.03	.1460	.1247	.1333	-.0011	9.19	7.15	.1183	.54	3.97

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) – CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
11	1/56 – 12/70	0	90.0	.04	2.90	-.2098	-1.11	2.82	900
11	1/56 – 12/70	1	90.0	.18	6.87	.1475	-.66	5.34	900
11	1/56 – 12/70	2	90.0	2.84	7.32	.1798	-.18	5.34	900
11	1/56 – 12/70	3	90.0	5.47	7.69	.1970	-.17	5.66	900
11	1/56 – 12/70	4	90.0	7.82	8.00	.2164	-.25	6.31	900
11	1/56 – 12/70	5	90.0	10.40	8.73	.2569	-.27	7.00	900
11	1/56 – 12/70	6	90.0	13.12	9.62	.3025	-.23	7.95	900
11	1/56 – 12/70	7	90.0	15.89	10.26	.312''	-.27	9.12	900
11	1/56 – 12/70	8	90.0	18.90	11.18	.3210	-.44	10.47	900
11	1/56 – 12/70	9	90.0	21.89	12.13	.3635	-.27	11.81	900
11	1/56 – 12/70	10	90.0	24.84	13.28	.3938	-.31	13.35	900
11	1/56 – 12/70	11	90.0	27.83	13.80	.3865	-.45	14.85	900
11	1/56 – 12/70	12	90.0	29.90	14.03	.4052	-.68	15.47	900
11	1/56 – 12/70	13	90.0	30.24	13.15	.3793	-.46	14.16	900
11	1/56 – 12/70	14	90.0	28.33	11.84	.3742	-.65	11.90	900
11	1/56 – 12/70	15	90.0	24.47	9.90	.3551	-.42	9.68	900
11	1/56 – 12/70	16	90.0	20.01	8.48	.3104	-.42	8.07	900
11	1/56 – 12/70	17	90.0	15.06	7.43	.2043	-.43	6.74	900
11	1/56 – 12/70	18	90.0	10.01	6.51	.1792	-.41	5.13	900
11	1/56 – 12/70	19	90.0	6.44	5.67	.1853	-.17	4.09	900
11	1/56 – 12/70	20	90.0	4.19	5.32	.1609	-.12	3.42	900
11	1/56 – 12/70	21	90.0	3.37	5.53	.2279	-.02	3.10	900
11	1/56 – 12/70	22	90.0	3.16	5.95	.2188	.07	3.27	900
11	1/56 – 12/70	23	90.0	3.72	6.43	.2058	.34	3.21	900
11	1/56 – 12/70	24	90.0	4.81	6.99	.1953	.45	3.31	900
11	1/56 – 12/70	25	90.0	6.38	7.76	.2359	.37	3.77	900
11	1/56 – 12/70	26	90.0	7.91	8.25	.2332	.31	3.94	900
11	1/56 – 12/70	27	90.0	9.42	8.88	.1622	.52	4.04	900

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869)   - CAPE KENNEDY
MONTH OF RECORD   - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 0
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

. . . .

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
.60	2.67	-.2884	-.93	2.96	924		.56	-1.06

MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.55	2.67	.5313	-.86	2.97	.5288	-.3028	.0570	-.3501	.64	2.20	-.3044	-1.04	2.42
.54	2.65	.3530	-.82	2.93	.2523	-.2932	.1665	-.2563	.65	2.47	-.3446	-1.00	2.77
.56	2.65	.1236	-.79	2.97	.0679	-.2932	.1634	-.1050	.62	2.65	-.3095	-.96	2.90
.59	2.65	.1374	-.78	2.98	.0067	-.2916	.0713	-.0354	.60	2.65	-.3021	-.94	2.95
.59	2.66	.0658	-.78	2.99	-.0131	-.2868	.0318	.0212	.59	2.67	-.2914	-.93	2.96
.59	2.67	.1415	-.77	3.01	.0128	-.2799	-.0484	-.0053	.59	2.65	-.2849	-.93	2.96

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869) - CAPE KENNEDY
MONTH OF RECORD - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 1
ALPHA ANGLE - 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.58	6.73	-.0011	.27	5.88	924

MEAN YP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
1.55	6.70	.7125	.39	5.89	.6148	.0033	.3161	-.3225
1.61	6.71	.3770	.54	5.90	.2585	.0043	.3417	-.3377
1.73	6.75	.1816	.62	5.89	.0346	.0057	.2162	-.2096
1.62	6.74	.0970	.64	5.87	-.0254	.0019	.0957	-.0905
1.84	6.74	.0619	.68	5.88	-.0288	.0042	.0398	-.0359
1.83	6.79	.0569	.70	5.93	-.0228	.0132	.0088	.0090

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.11	.21

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.33	4.18	-.0599	.04	4.25
1.52	5.80	-.0548	.04	5.31
1.57	6.46	-.0355	.14	5.73
1.56	6.67	-.0129	.22	5.85
1.55	6.71	-.0045	.23	5.87
1.53	6.72	-.0014	.28	5.87

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 2
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.03	7.15	.0328	.52	5.56	924

	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
	5.00	7.10	.7210	.58	5.60	.6100	.0323	.2874	-.2996
	5.03	7.10	.4332	.71	5.60	.2784	.0480	.3118	-.3345
	5.15	7.13	.2462	.80	5.59	.0591	.0467	.2248	-.2360
	5.23	7.13	.1592	.82	5.61	.0023	.0432	.1136	-.1140
	5.30	7.14	.1349	.63	5.65	-.0053	.0456	.0564	-.0430
	5.37	7.14	.1332	.88	5.72	.0113	.0568	.0205	-.0009

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	4.58	.71

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
4.67	4.39	.0401	.51	4.14
4.82	5.90	-.0137	.42	5.07
4.91	6.70	-.0115	.42	5.41
4.94	7.01	.0148	.46	5.52
4.94	7.08	.0251	.49	5.55
4.93	7.09	.0304	.51	5.55

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — DECEMBER
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 3
ALPHA ANGLE — 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT)$
$YP = V(AT\ T + DT)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8.37	7.51	.0932	.38	5.93	924

	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XF,Y)	R (YP,X)
2	8.35	7.47	.7486	.46	5.97	.5727	.0904	.2894	-.2021
4	8.38	7.46	.5226	.57	6.00	.2821	.0960	.2950	-.2223
6	8.47	7.49	.3537	.69	6.01	.1097	.0980	.2017	-.1630
8	8.57	7.50	.2655	.72	6.02	.0537	.0952	.1178	-.0786
10	8.65	7.48	.2295	.78	6.04	.0573	.0904	.0823	.0005
12	8.73	7.48	.2317	.84	6.10	.0540	.1002	.0551	.0100

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
7.89	.66

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
7.95	4.54	.0532	.41	4.65
8.08	6.06	.0119	.30	5.46
8.17	6.86	.0447	.29	5.78
8.20	7.20	.0699	.32	5.80
8.20	7.31	.0778	.33	5.90
8.18	7.30	.0836	.34	5.91

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 4
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP |

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
11.71	8.06	.1565	.70	6.67	924	11.19	1.04

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	11.69	8.02	.7551	.79	6.71	.5898	.1579	.3164	-.0897	11.25	5.00	.0692	.74	5.17
24	11.73	8.02	.5526	.87	6.72	.3119	.1594	.3135	-.1272	11.34	6.48	.0561	.62	6.08
36	11.80	8.05	.4039	1.01	6.76	.1617	.1630	.2266	-.0919	11.44	7.26	.0990	.60	6.44
48	11.89	8.07	.3314	1.04	6.79	.0780	.1601	.1646	-.0369	11.47	7.57	.1154	.61	6.57
60	11.94	8.08	.2848	1.10	6.80	.0606	.1544	.1207	.0128	11.49	7.72	.1300	.62	6.61
72	12.04	8.09	.2771	1.18	6.83	.0519	.1541	.0798	.0161	11.47	7.74	.1416	.64	6.64

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - DECEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 5   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

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| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP |

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	14.54	8.83	.1726	1.16	7.71	924		14.07	1.65

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	14.52	8.77	.7555	1.25	7.75	.5791	.1668	.3332	-.0520	14.11	5.56	.0343	1.28	6.01
24	14.55	8.76	.5518	1.33	7.78	.3162	.1698	.2926	-.0937	14.19	7.17	.0841	1.15	7.07
36	14.63	8.81	.4071	1.49	7.81	.1669	.1761	.2277	-.0798	14.27	7.95	.1148	1.08	7.44
48	14.72	8.85	.3340	1.53	7.85	.0895	.1735	.1664	-.0220	14.31	8.29	.1321	1.08	7.59
60	14.79	8.87	.2721	1.62	7.85	.0818	.1687	.1256	.0326	14.35	8.49	.1462	1.09	7.64
72	14.88	8.88	.2503	1.70	7.87	.0966	.1661	.1011	.0513	14.34	8.55	.1527	1.10	7.65

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858)   — CAPE KENNEDY
MONTH OF RECORD   — DECEMBER
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM)   — 6
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
17.52	9.42	.1966	1.21	8.47	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	17.50	9.39	.7832	1.31	8.49	.5688	.1923	.3228	.0148
24	17.55	9.40	.5933	1.42	8.53	.3193	.1970	.2731	-.0378
36	17.64	9.43	.4538	1.58	8.59	.1675	.2056	.1964	-.0225
48	17.75	9.45	.3764	1.65	8.65	.1026	.2055	.1412	.0256
60	17.84	9.48	.326:	1.74	8.67	.1075	.1995	.1371	.0491
72	17.92	9.49	.3016	1.87	8.72	.1015	.1994	.1256	.0674

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	17.13	1.80

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
17.15	5.71	.0317	1.39	6.72
17.19	7.44	.1061	1.23	7.82
17.25	8.32	.1431	1.16	8.23
17.27	8.71	.1615	1.15	8.36
17.29	8.90	.1642	1.14	8.36
17.28	8.98	.1677	1.13	8.38

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD    - DECEMBER              Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 7                     XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                  YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
20.53	10.52	.2218	1.49	9.32	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	20.45	10.45	.7847	1.61	9.34	.5928	.2185	.3033	.0548
24	20.49	10.45	.5941	1.71	9.42	.3519	.2262	.2498	.0065
36	20.57	10.49	.4545	1.87	9.52	.2016	.2308	.1731	.0147
48	20.63	10.52	.3713	1.96	9.58	.1416	.2331	.1277	.0345
60	20.71	10.52	.3187	2.06	9.62	.1281	.2307	.1239	.0422
72	20.78	10.53	.2884	2.21	9.67	.1030	.2266	.1354	.0562

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	20.22	2.13

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
20.24	6.40	.1010	1.74	7.32
20.27	8.35	.1550	1.57	8.57
20.31	9.32	.1843	1.49	9.05
20.34	9.75	.1977	1.47	9.18
20.34	9.97	.1995	1.45	9.20
20.34	10.07	.1939	1.43	9.21

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 8
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
23.56	11.75	.2809	1.85	10.26	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	23.47	11.65	.8035	1.96	10.25	.6228	.2736	.3402	.1212
24	23.46	11.59	.6178	2.10	10.32	.3695	.2816	.2640	.0727
36	23.51	11.62	.4819	2.23	10.39	.2179	.2849	.1723	.0453
48	23.54	11.67	.3939	2.34	10.49	.1579	.2922	.1268	.0455
60	23.59	11.68	.3379	2.41	10.51	.1318	.2882	.1161	.0480
72	23.67	11.66	.2969	2.54	10.52	.1123	.2853	.1252	.0553

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y		
	23.35	2.56		

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
23.39	6.89	.1433	2.17	7.82
23.43	9.16	.2109	1.98	9.38
23.44	10.23	.2545	1.89	9.95
23.46	10.77	.2664	1.86	10.10
23.47	11.04	.2660	1.84	10.14
23.46	11.22	.2609	1.82	10.15

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - DECEMBER
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 9
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	26.78	13.34	.3083	2.12	11.53	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	26.70	13.23	.6102	2.23	11.51	.6517	.3008	.3143	.1753
24	26.68	13.14	.6353	2.36	11.59	.4028	.3021	.2462	.1213
36	26.69	13.13	.5068	2.48	11.67	.2314	.3042	.1691	.0972
48	26.67	13.16	.4114	2.58	11.77	.1583	.3087	.1206	.0806
60	26.67	13.14	.3469	2.65	11.76	.1278	.3045	.1163	.0713
72	26.71	13.11	.3066	2.77	11.78	.1095	.2995	.1376	.0781

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	26.69	2.93

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
26.71	7.76	.2195	2.55	8.62
26.74	10.25	.2548	2.33	10.44
26.75	11.47	.2811	2.21	11.15
26.77	12.14	.2956	2.17	11.35
26.78	12.50	.2930	2.15	11.39
26.77	12.69	.2840	2.13	11.39

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 10
ALPHA ANGLE - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
29.88	14.63	.3070	2.30	13.01	924	28.84	3.09

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	29.79	14.49	.8184	2.42	12.99	.6842	.3018	.2930	.2223	29.07	8.40	.2006	2.66	9.41
24	29.73	14.38	.8494	2.57	13.05	.4395	.3042	.2217	.1742	29.27	11.12	.2541	2.43	11.62
36	29.75	14.34	.5145	2.69	13.14	.2747	.3075	.1489	.1335	29.38	12.54	.2878	2.34	12.47
48	29.68	14.32	.4176	2.75	13.27	.2086	.3092	.1268	.1142	29.51	13.29	.2897	2.31	12.69
60	29.68	14.34	.3473	2.82	13.27	.1598	.3070	.1428	.0999	29.58	13.72	.2804	2.25	12.77
72	29.68	14.32	.2940	2.93	13.27	.1479	.3004	.1433	.0925	29.63	13.98	.2812	2.23	12.79

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12858) - CAPE KENNEDY
MONTH OF RECORD - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 11
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	32.49	15.08	.3057	2.35	14.06	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	32.39	14.88	.8266	2.54	14.04	.7112	.3031	.2758	.2572
24	32.34	14.79	.6568	2.70	14.07	.4658	.3063	.2094	.2052
36	32.32	14.78	.5348	2.79	14.20	.3093	.3101	.1392	.1640
48	32.26	14.78	.4399	2.85	14.34	.2462	.3078	.1080	.1391
60	32.26	14.77	.3591	2.93	14.34	.2034	.3044	.1149	.1312
72	32.27	14.76	.2857	3.07	14.32	.1748	.2971	.1334	.1030

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	32.38	3.07

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
32.49	8.49	.1855	2.72	9.85
32.52	11.37	.2501	2.51	12.41
32.52	12.75	.2888	2.43	13.36
32.55	13.55	.2958	2.40	13.62
32.54	14.07	.2855	2.38	13.75
32.52	14.45	.2818	2.36	13.80

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 12
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	
35.01	15.16	.2937	2.69	14.62	924	

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
GIVEN X	GIVEN Y
34.84	3.46

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	34.97	15.00	.8312	2.88	14.65	.7624	.2937	.2660	.2555	34.91	8.43	.1785	3.12	9.44
24	34.91	14.87	.6524	3.07	14.69	.5256	.2990	.1929	.2013	34.97	11.49	.2557	2.89	12.43
36	34.94	14.88	.5193	3.18	14.73	.3565	.3012	.1362	.1608	34.96	12.96	.2775	2.79	13.65
48	34.90	14.86	.4218	3.22	14.79	.2715	.2990	.1008	.1332	34.99	13.75	.2858	2.75	14.07
60	34.91	14.88	.3358	3.34	14.82	.2191	.2996	.1017	.1101	34.99	14.28	.2806	2.71	14.26
72	34.94	14.93	.2545	3.48	14.76	.1880	.2981	.1185	.0744	34.99	14.66	.2784	2.68	14.33

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 13
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
35.94	14.09	.3166	3.00	13.54	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	35.87	14.00	.8285	3.12	13.57	.7933	.3130	.3081	.2558
24	35.86	13.90	.6657	3.24	13.63	.5858	.3128	.2343	.2050
36	35.88	13.85	.5223	3.38	13.68	.4278	.3131	.1615	.1687
48	35.88	13.83	.4188	3.41	13.72	.3281	.3117	.1094	.1328
60	35.90	13.84	.3381	3.51	13.75	.2487	.3127	.0975	.1090
72	35.93	13.84	.2793	3.66	13.67	.2077	.3148	.1137	.0945

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
35.61	3.72

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
35.71	7.89	.1887	3.45	8.20
35.76	10.51	.2691	3.26	10.95
35.80	12.01	.2986	3.13	12.24
35.82	12.79	.3148	3.10	12.79
35.84	13.26	.3103	3.04	13.12
35.85	13.53	.3023	2.99	13.23

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 14
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP									CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N					GIVEN X		GIVEN Y	
	34.50	12.85	.3365	2.70	11.17	924					34.20		3.40	
DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	34.43	12.70	.8300	2.77	11.22	.7890	.3331	.3547	.2618	34.29	7.17	.1573	3.14	6.77
24	34.42	12.60	.6564	2.89	11.30	.6015	.3301	.2895	.1880	34.33	9.69	.2723	2.96	8.86
36	34.41	12.53	.5074	3.00	11.34	.4615	.3289	.2058	.1386	34.38	11.07	.3207	2.85	9.89
48	34.43	12.46	.3944	3.09	11.41	.3670	.3301	.1584	.1191	34.40	11.81	.3255	2.79	10.38
60	34.37	12.43	.3097	3.16	11.41	.2995	.3316	.1267	.0959	34.44	12.22	.3300	2.76	10.65
72	34.40	12.41	.2396	3.31	11.36	.2375	.3353	.1362	.0871	34.45	12.48	.3213	2.70	10.83

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
31.00	11.28	.3111	2.32	9.41	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	30.95	11.22	.8117	2.34	9.51	.7922	.3120	.3417	.2214
24	30.93	11.08	.6549	2.44	9.57	.6155	.3081	.2877	.1663
36	30.92	11.03	.5194	2.55	9.65	.4791	.3120	.2133	.1208
48	30.96	11.01	.4004	2.64	9.72	.3825	.3185	.1538	.1044
60	30.99	11.03	.2899	2.73	9.70	.3173	.3220	.1233	.0877
72	31.04	11.04	.2132	2.87	9.67	.2583	.3243	.1382	.0763

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
30.72	3.06

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
30.76	6.57	.1651	2.84	5.67
30.83	8.51	.2430	2.65	7.35
30.86	9.62	.2934	2.53	8.24
30.88	10.33	.3051	2.46	8.69
30.91	10.79	.3054	2.41	8.92
30.93	11.02	.2971	2.35	9.07

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - DECEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 16   XP = U(AT T + DT)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP · CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
26.50	9.52	.2693	2.01	8.39	924		26.24	2.71

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	26.53	9.49	.7881	2.04	8.49	.7754	.2730	.3269	.1837		26.25	5.85	.0919	2.47	5.20
24	26.51	9.48	.6432	2.13	8.56	.6090	.2689	.2667	.1363		26.30	7.28	.1980	2.31	6.59
36	26.54	9.48	.4950	2.22	8.63	.4899	.2706	.2200	.1023		26.33	8.26	.2326	2.21	7.27
48	26.56	9.47	.3746	2.28	8.64	.3884	.2724	.1834	.0803		26.37	8.82	.2451	2.14	7.70
60	26.57	9.49	.2760	2.34	8.64	.3347	.2775	.1490	.0775		26.41	9.15	.2521	2.10	7.89
72	26.59	9.54	.1876	2.45	8.63	.2835	.2786	.1462	.0640		26.44	9.35	.2542	2.05	8.02

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — DECEMBER
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 17
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
21.64	8.35	.2719	1.53	7.49	924

					GIVEN X	GIVEN Y
					21.38	2.12

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	21.65	8.32	.7682	1.53	7.57	.7820	.2756	.7198	.1593	21.39	5.32	.1674	1.94	4.60
24	21.67	8.31	.6104	1.61	7.65	.6277	.2738	.2626	.0894	21.40	6.58	.2400	1.79	5.77
36	21.67	8.30	.4543	1.69	7.71	.4999	.2744	.2426	.0414	21.45	7.40	.2635	1.69	6.43
48	21.69	8.27	.3312	1.73	7.75	.3975	.2752	.2119	.0349	21.50	7.86	.2590	1.64	6.83
60	21.65	8.30	.2258	1.77	7.76	.3066	.2802	.1879	.0288	21.56	8.13	.2595	1.60	7.08
72	21.63	8.32	.1714	1.84	7.74	.2393	.2791	.1671	.0476	21.60	8.22	.2558	1.56	7.23

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — DECEMBER
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 18
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
16.24	7.33	.2434	1.01	6.13	924

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
16.16	1.57

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	16.23	7.33	.7063	1.00	6.13	.7628	.2388	.3302	.1369	16.17	5.19	.0747	1.41	3.85
24	16.23	7.31	.5834	1.05	6.17	.6313	.2359	.2931	.0793	16.16	5.94	.1737	1.31	4.66
36	16.23	7.30	.4899	1.11	6.23	.4985	.2399	.2654	.0502	16.17	6.37	.1946	1.21	5.23
48	16.19	7.30	.3875	1.15	6.26	.4027	.2391	.2291	.0338	16.20	6.75	.2118	1.16	5.55
60	16.17	7.31	.3154	1.18	6.25	.3127	.2439	.1850	.0314	16.22	6.95	.2215	1.12	5.78
72	16.16	7.33	.2465	1.24	6.22	.2536	.2469	.1601	.0268	16.23	7.10	.2272	1.08	5.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)   - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD   - DECEMBER              Y  = V(AT T)
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     - 19                    XP = U(AT T + DT)
ALPHA ANGLE       - 90.0                  YP = V(AT T + DT)
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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
11.16	6.84	.2763	.58	4.85	924

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
11.21	1.02

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	·	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	11.17	6.81	.6886	.61	4.82	.6533	.2689	.3251	.1691	·	11.18	4.96	.1159	.84	3.60
24	11.14	6.83	.6321	.62	4.86	.5841	.2663	.3362	.1320	·	11.18	5.29	.1359	.80	3.83
36	11.14	6.86	.5191	.66	4.88	.4465	.2714	.3144	.0598	·	11.15	5.82	.1951	.73	4.23
48	11.13	6.86	.4628	.69	4.90	.4091	.2757	.2810	.0702	·	11.17	6.05	.2107	.71	4.35
60	11.10	6.88	.3863	.74	4.90	.2866	.2777	.2699	.0591	·	11.18	6.30	.2121	.66	4.55
72	11.10	6.89	.3397	.80	4.87	.2710	.2802	.2599	.0628	·	11.19	6.43	.2199	.64	4.58

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD    - DECEMBER              Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 20                    XP = U(AT T + DT)
ALPHA ANGLE        -  90.0                 YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8.36	6.57	.2056	.32	3.95	924

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
8.33	.67

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	8.37	6.56	.6863	.32	3.94	.4821	.2000	.2523	.1256	8.32	4.78	.0601	.47	3.40
24	8.34	6.57	.6017	.33	3.97	.4740	.2078	.2772	.1168	8.34	5.25	.0616	.47	3.40
36	8.32	6.58	.5173	.34	4.00	.3142	.2111	.2644	.0954	8.35	5.62	.0914	.41	3.66
48	8.29	6.60	.4401	.37	4.00	.3248	.2148	.2659	.0761	8.36	5.90	.1130	.41	3.65
60	8.26	6.59	.4063	.39	4.02	.2189	.2226	.2588	.0692	8.38	6.00	.1197	.38	3.76
72	8.25	6.57	.3548	.41	4.02	.2083	.2214	.2336	.0645	8.38	6.14	.1395	.37	3.79

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X. Y. XP. YP

STATION (12868) — CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD — DECEMBER   Y = V(AT T)
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM) — 21   XP = U(AT T + DT)
ALPHA ANGLE — 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						·	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	·	GIVEN X	GIVEN Y
7.37	6.52	.2894	.30	3.71	924	·	7.19	.68

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	·	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	7.38	6.50	.6887	.26	3.68	.4362	.2845	.2500	.2056	·	7.25	4.73	.1758	.46	3.30
24	7.38	6.53	.6245	.25	3.70	.4612	.2957	.2705	.1371	·	7.21	5.08	.2056	.47	3.25
36	7.32	6.55	.5558	.25	3.71	.3336	.2932	.2305	.1093	·	7.25	5.41	.2287	.42	3.46
48	7.24	6.56	.4935	.22	3.73	.2724	.2991	.2153	.1003	·	7.30	5.68	.2347	.40	3.53
60	7.15	6.59	.4215	.21	3.74	.2222	.3046	.2266	.0656	·	7.33	5.90	.2354	.39	3.56
72	7.13	6.59	.3393	.21	3.73	.1905	.3079	..871	.0583	·	7.35	6.12	.2548	.38	3.61

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – DECEMBER   Y = V(AT T)
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 22   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
7.33	6.41	.2682	.10	3.33	924	7.00	.36

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	7.29	6.40	.7317	.07	3.31	.4805	.2721	.2683	.2231	7.13	4.37	.1039	.21	2.88
24	7.26	6.40	.6891	.05	3.32	.4857	.2740	.2505	.1878	7.15	4.65	.1530	.22	2.89
36	7.20	6.45	.6207	.05	3.35	.3463	.2750	.2123	.1636	7.20	5.03	.1900	.18	3.10
48	7.15	6.45	.5534	.02	3.37	.2932	.2805	.2250	.1260	7.22	5.34	.1921	.17	3.15
60	7.08	6.47	.4865	.02	3.37	.2228	.2860	.1988	.1237	7.28	5.60	.2068	.16	3.22
72	7.01	6.49	.4113	.00	3.37	.1851	.2873	.1504	.0639	7.28	5.83	.2415	.16	3.26

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – DECEMBER   Y = V(AT T)
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 23   XP = U(AT T + DT)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                        •   FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
8.23	7.02	.1909	.18	3.50	924		7.85	.42

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	8.26	7.06	.7651	.17	3.53	.4020	.2059	.1580	.1364		7.91	4.52	.1331	.26	3.19
24	8.24	7.07	.7203	.14	3.56	.4592	.2187	.1793	.1121		7.92	4.86	.1335	.29	3.10
36	8.17	7.09	.6348	.10	3.57	.2827	.2208	.1592	.1096		8.01	5.42	.1327	.25	3.34
48	8.10	7.14	.5663	.09	3.60	.2978	.2371	.1212	.1028		8.07	5.78	.1672	.27	3.33
60	7.97	7.17	.5262	.07	3.60	.1341	.2442	.1040	.0720		8.13	5.96	.1703	.22	3.46
72	7.88	7.21	.4415	.06	3.61	.0967	.2499	.0797	.0082		8.15	6.26	.1853	.21	3.48

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 24
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
9.97	7.88	.1924	.48	3.58	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	10.01	7.92	.7610	.49	3.58	.4513	.1982	.1511	.1045
24	9.99	7.99	.7146	.47	3.58	.4434	.2082	.1343	.0951
36	9.91	8.01	.6562	.45	3.58	.3205	.2139	.1279	.0812
48	9.80	8.08	.5774	.41	3.59	.2542	.2122	.0857	.0639
60	9.67	8.13	.5111	.39	3.60	.1401	.2129	.0575	.0651
72	9.57	8.19	.4664	.35	3.63	.1281	.2236	.0440	.0228

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
9.64	.67

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
9.67	5.10	.1696	.55	3.18
9.70	5.49	.1918	.56	3.20
9.76	5.93	.1781	.54	3.38
9.85	6.42	.2000	.54	3.46
9.93	6.76	.1988	.52	3.54
9.95	6.94	.2084	.52	3.55

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 25
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
11.89	8.68	.1841	.65	3.92	924		11.52	.77

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	11.90	8.68	.7870	.64	3.90	.4859	.1844	.1545	.1399		11.59	5.35	.1209	.70	3.41
24	11.84	8.74	.7381	.62	3.91	.4578	.1973	.1435	.0709		11.62	5.82	.1876	.71	3.47
36	11.78	8.81	.6679	.60	3.91	.2672	.2022	.1018	.0850		11.69	6.44	.1804	.69	3.77
48	11.64	8.91	.6221	.58	3.93	.2411	.1905	.0752	.0469		11.78	6.77	.2038	.69	3.80
60	11.53	8.98	.5577	.56	3.92	.1314	.1897	.0530	.0544		11.86	7.19	.1961	.68	3.88
72	11.39	9.09	.5082	.54	3.93	.0929	.1980	.0492	.0308		11.91	7.45	.1933	.67	3.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 26
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT)
YP = V(AT T + DT)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	13.42	9.54	.1154	.85	4.21	924		13.03	.89

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	13.42	9.55	.8177	.83	4.20	.4674	.1270	.1088	.1039		13.10	5.49	.0520	.86	3.72
24	13.41	9.60	.7667	.84	4.20	.5177	.1400	.0880	.1020		13.13	6.12	.0922	.87	3.60
36	13.37	9.67	.6968	.84	4.19	.3038	.1446	.0809	.0708		13.19	6.83	.0996	.86	4.01
48	13.25	9.75	.6610	.83	4.20	.2831	.1425	.0752	.0574		13.27	7.15	.1057	.86	4.04
60	13.13	9.82	.5909	.78	4.17	.1574	.1444	.0782	.0188		13.35	7.67	.0998	.86	4.15
72	13.00	9.88	.5445	.74	4.18	.1557	.1565	.0811	.0089		13.42	7.96	.1001	.87	4.15

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY            X  = U(AT T)
MONTH OF RECORD    - DECEMBER                Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 27                      XP = U(AT T + DT)
ALPHA ANGLE        - 90.0                    YP = V(AT T + DT)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	14.62	10.22	.1122	1.27	4.45	924

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	14.17	1.30

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	14.65	10.30	.8524	1.26	4.44	.5997	.1250	.0953	.0860	14.21	5.34	.1034	1.29	3.56
24	14.65	10.36	.7883	1.29	4.56	.5403	.1405	.0827	.0789	14.25	6.28	.1241	1.27	3.74
36	14.59	10.44	.7309	1.29	4.57	.3806	.1465	.0519	.0650	14.31	6.96	.1434	1.27	4.11
48	14.50	10.55	.6762	1.25	4.58	.2994	.1450	.0369	.0445	14.39	7.51	.1474	1.28	4.24
60	14.38	10.62	.6083	1.23	4.57	.2036	.1424	.0252	.0243	14.48	8.09	.1415	1.28	4.35
72	14.25	10.70	.5636	1.16	4.59	.1616	.1548	.0196	.0270	14.56	8.42	.1364	1.29	4.39

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) – CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
12	1/56 – 12/70	0	90.0	.60	2.67	-.2884	-.93	2.96	924
12	1/56 – 12/70	1	90.0	1.58	6.73	-.0011	.27	5.88	924
12	1/56 – 12/70	2	90.0	5.03	7.15	.0328	.52	5.56	924
12	1/56 – 12/70	3	90.0	8.37	7.51	.0932	.38	5.93	924
12	1/56 – 12/70	4	90.0	11.71	8.06	.1565	.70	6.67	924
12	1/56 – 12/70	5	90.0	14.54	8.83	.1726	1.16	7.71	924
12	1/56 – 12/70	6	90.0	17.52	9.42	.1966	1.21	8.47	924
12	1/56 – 12/70	7	90.0	20.50	10.52	.2218	1.49	9.32	924
12	1/56 – 12/70	8	90.0	23.56	11.75	.2809	1.85	10.26	924
12	1/56 – 12/70	9	90.0	26.78	13.34	.3083	2.12	11.53	924
12	1/56 – 12/70	10	90.0	29.88	14.63	.3070	2.30	13.01	924
12	1/56 – 12/70	11	90.0	32.49	15.08	.3057	2.35	14.06	924
12	1/56 – 12/70	12	90.0	35.01	15.16	.2937	2.69	14.62	924
12	1/56 – 12/70	13	90.0	35.94	14.09	.3166	3.00	13.54	924
12	1/56 – 12/70	14	90.0	34.50	12.85	.3365	2.70	11.17	924
12	1/56 – 12/70	15	90.0	31.00	11.28	.3111	2.32	9.41	924
12	1/56 – 12/70	16	90.0	26.50	9.52	.2693	2.01	8.39	924
12	1/56 – 12/70	17	90.0	21.64	8.35	.2719	1.53	7.49	924
12	1/56 – 12/70	18	90.0	16.24	7.33	.2434	1.01	6.13	924
12	1/56 – 12/70	19	90.0	11.16	6.84	.2763	.58	4.85	924
12	1/56 – 12/70	20	90.0	8.36	6.57	.2056	.32	3.95	924
12	1/56 – 12/70	21	90.0	7.37	6.52	.2894	.30	3.71	924
12	1/56 – 12/70	22	90.0	7.33	6.41	.2682	.10	3.33	924
12	1/56 – 12/70	23	90.0	8.23	7.02	.1909	.18	3.50	924
12	1/56 – 12/70	24	90.0	9.97	7.88	.1924	.48	3.58	924
12	1/56 – 12/70	25	90.0	11.89	8.68	.1841	.65	3.92	924
12	1/56 – 12/70	26	90.0	13.42	9.54	.1154	.85	4.21	924
12	1/56 – 12/70	27	90.0	14.62	10.22	.1122	1.27	4.45	924

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 0
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.66	2.90	-.2412	-.95	3.30	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.02	2.89	-.5022	-.02	3.34	-.5076	-.2385	.3446	-.0938
24	.03	3.36	-.5817	-.02	4.18	-.6337	-.2548	.3779	-.0430
36	.01	3.79	-.6513	.01	4.63	-.6981	-.2679	.3332	.0408
48	.01	3.79	-.6526	.03	4.79	-.7218	-.2635	.2565	.1159
60	.01	3.99	-.6850	.04	4.75	-.7196	-.2835	.2149	.1839
72	.00	3.92	-.6716	.06	4.67	-.7077	-.2597	.1801	.1683

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.74	-.90

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.43	2.43	-.2368	-.36	2.74
.40	2.29	-.2246	-.39	2.44
.36	2.16	-.2143	-.42	2.31
.32	2.19	-.2176	-.45	2.27
.30	2.11	-.2005	-.47	2.29
.30	2.15	-.2379	-.47	2.33

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - JANUARY
PERIOD OF ECORD - 1/56 - 12/70
ALTITUDE (KM) - 1
ALPHA ANGLE - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + .DT) - V(AT T)

		QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP									CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	2.73	7.02	.0092	.74	6.31	930		3.03	.91

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.01	5.64	-.4035	-.04	5.82	-.4655	-.0022	.4230	-.3618	.79	5.90	.0174	1.69	4.91
24	-.02	8.04	-.5713	-.00	7.73	-.6222	-.0054	.3193	-.2886	.94	5.38	.0193	1.00	4.52
36	-.04	9.31	-.6565	-.07	8.86	-.7084	-.0027	.1889	-.1812	1.06	5.14	.0074	.64	4.29
48	-.05	9.70	-.6803	-.01	9.23	-.7330	-.0029	.0696	-.0706	1.16	5.12	.0069	.41	4.27
60	-.00	9.70	-.6769	.02	9.10	-.7252	-.0051	.0098	-.0165	1.23	5.16	.0026	.30	4.34
72	-.01	9.62	-.6722	.07	9.87	-.7050	.0111	-.0216	-.0141	1.23	5.20	-.0190	.29	4.47

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 2
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
7.03	7.06	.0462	1.10	6.40	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
7.37	1.23

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.02	5.49	-.3887	-.06	5.52	-.4350	.0632	.3141	-.3343	3.03	6.12	.0371	3.36	5.33
24	-.01	7.58	-.5311	-.09	7.36	-.5804	.0217	.2736	-.2881	3.08	5.65	.0478	2.22	4.88
36	-.02	8.83	-.6144	-.09	8.43	-.6622	.0164	.1677	-.1351	3.22	5.41	.0468	1.40	4.66
48	-.00	9.23	-.6403	-.06	8.93	-.6985	.0266	.0622	-.1090	3.35	5.38	.0392	.87	4.55
60	.03	9.20	-.6338	-.04	8.89	-.6971	.0432	-.0022	-.0805	3.42	5.44	.0133	.61	4.58
72	.06	9.29	-.6358	.01	8.71	-.6838	.0653	-.0329	-.0862	3.48	5.44	-.0095	.55	4.67

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — JANUARY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 3
ALPHA ANGLE   — 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
10.75	7.37	.0949	1.30	7.21	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.02	5.40	-.3643	-.08	5.93	-.4138	.0854	.2515	-.2839
24	.02	7.34	-.4899	-.10	7.94	-.5566	.0449	.2210	-.2437
36	-.01	8.54	-.5612	-.13	9.00	-.6307	.0583	.1249	-.1899
48	-.00	8.87	-.5775	-.13	9.56	-.6676	.0918	.0132	-.1308
60	.02	9.02	-.5825	-.14	9.61	-.6688	.1013	-.0386	-.1040
72	.04	9.10	-.5829	-.12	9.55	-.6646	.0976	-.0501	-.0980

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X 11.12
GIVEN Y 1.46

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
5.08	6.60	.0977	4.76	6.22
5.09	6.21	.1155	3.19	5.72
5.25	5.99	.1043	2.01	5.47
5.39	5.99	.0831	1.17	5.34
5.46	5.98	.0699	.76	5.35
5.51	5.98	.0631	.64	5.38

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 4
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
14.35	8.10	.1485	1.72	7.91	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.00	5.72	-.3507	-.10	6.47	-.4135	.1086	.2249	-.2690
24	-.02	7.50	-.4576	-.12	8.62	-.5491	.1068	.1662	-.2363
36	-.01	8.77	-.5263	-.15	9.67	-.6195	.1108	.0833	-.1947
48	.01	9.29	-.5500	-.15	10.17	-.6529	.1184	.0203	-.1604
60	.05	9.68	-.5681	-.13	10.34	-.6643	.1112	-.0174	-.1306
72	.07	9.92	-.5765	-.14	10.35	-.6598	.1024	-.0428	-.1079

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y		
	14.64	1.86		

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
7.05	7.35	.1587	6.19	6.88
7.09	7.04	.1676	4.20	6.37
7.22	6.80	.1634	2.71	6.09
7.34	6.72	.1547	1.92	5.94
7.41	6.64	.1529	1.38	5.90
7.49	6.61	.1494	1.00	5.94

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 5
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
18.02	9.08	.2007	2.15	8.72	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.01	6.26	-.3435	-.10	7.09	-.4094	.1394	.1760	-.2453
24	-.03	8.11	-.4432	-.12	9.46	-.5489	.1353	.1248	-.2232
36	-.04	9.32	-.5041	-.18	10.60	-.6179	.1464	.0538	-.2007
48	-.02	10.07	-.5375	-.21	11.21	-.6544	.1718	-.0082	-.1971
60	.03	10.57	-.5599	-.21	11.36	-.6644	.1557	-.0307	-.1736
72	.06	11.00	-.5738	-.21	11.50	-.6665	.1487	-.0665	-.1487

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	18.31	2.26

MEAN XP	S.D. XP	R (XP,YF)	MEAN YP	S.D. YP
9.03	8.33	.2148	6.93	7.69
9.00	8.00	.2265	4.89	7.08
9.07	7.76	.2222	3.40	6.74
9.22	7.60	.2009	2.56	6.53
9.27	7.48	.2041	1.99	6.49
9.39	7.41	.1973	1.38	6.50

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JANUARY
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM)   — 6
ALPHA ANGLE   — 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

. . . .

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	21.68	9.80	.2295	2.80	9.58	930		22.07	2.89

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.03	6.58	-.3390	-.12	7.73	-.4055	.1405	.1418	-.2163	10.69	9.06	.2477	7.69	8.55
24	-.02	8.45	-.4329	-.15	10.29	-.5456	.1508	.0778	-.1994	10.72	8.73	.2548	5.28	7.88
36	-.03	9.90	-.5006	-.22	11.48	-.6130	.1723	.0219	-.2028	10.86	8.40	.2490	3.96	7.47
48	-.01	10.80	-.5340	-.27	12.18	-.6531	.1679	-.0158	-.1863	11.06	8.23	.2480	3.03	7.20
60	.05	11.22	-.5544	-.27	12.27	-.6628	.1509	-.0454	-.1514	11.04	8.13	.2566	2.19	7.16
72	.12	11.76	-.5731	-.27	12.32	-.6637	.1599	-.0777	-.1432	11.22	8.01	.2463	1.68	7.16

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 7
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
25.23	10.93	.2790	3.42	10.67	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
25.72	3.50

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.05	6.95	-.3191	-.13	8.56	-.4058	.1484	.1104	-.1862	12.54	10.24	.3023	8.34	9.57
24	.00	9.11	-.4160	-.21	11.61	-.5547	.1718	.0498	-.1905	12.61	9.85	.3124	5.94	8.74
36	.00	10.74	-.4881	-.30	12.73	-.6150	.1735	.0076	-.1881	12.60	9.47	.3212	4.40	8.32
48	.04	11.68	-.5178	-.35	13.41	-.6505	.1696	-.0271	-.1730	12.87	9.30	.3242	3.39	8.05
60	.12	12.33	-.5409	-.35	13.53	-.6626	.1513	-.0283	-.1684	12.99	9.14	.3292	3.00	7.95
72	.21	12.99	-.5652	-.35	13.77	-.6743	.1801	-.0636	-.1763	13.16	8.98	.3175	2.62	7.85

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 8
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
28.68	11.95	.3017	3.75	11.74	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
29.26	3.84

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.09	7.80	-.3288	-.15	9.35	-.4026	.1394	.0908	-.1663	14.12	11.19	.3315	8.19	10.60
24	.07	10.20	-.4272	-.23	12.71	-.5508	.1702	.0271	-.1758	14.29	10.73	.3430	5.78	9.69
36	.09	11.82	-.4878	-.32	14.21	-.6185	.1772	-.0091	-.1743	14.45	10.38	.3567	4.57	9.14
48	.13	12.82	-.5185	-.39	14.88	-.6530	.1907	-.0446	-.1779	14.75	10.17	.3521	3.73	8.84
60	.23	13.58	-.5382	-.37	15.00	-.6627	.1749	-.0470	-.1724	15.02	10.03	.3574	3.31	8.75
72	.30	14.38	-.5637	-.35	15.12	-.6677	.1844	-.0748	-.1685	15.19	9.84	.3530	2.73	8.72

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 9
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
32.14	13.29	.3108	4.17	12.79	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	32.71	4.17

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.09	8.19	-.3131	-.15	10.14	-.3976	.1264	.0461	-.1162	15.65	12.58	.3403	6.93	11.67
24	.10	10.80	-.4057	-.20	13.82	-.5485	.1654	.0004	-.1401	16.05	12.10	.3564	5.51	10.63
36	.10	12.55	-.4627	-.31	15.31	-.6106	.1703	-.0213	-.1480	16.31	11.74	.3703	4.66	10.07
48	.17	13.87	-.5016	-.40	15.89	-.6399	.1820	-.0461	-.1613	16.63	11.45	.3669	3.95	9.79
60	.29	14.64	-.5200	-.38	16.23	-.6574	.1790	-.0623	-.1578	16.9:	11.31	.3676	3.40	9.61
72	.40	15.41	-.5403	-.39	16.44	-.6668	.1933	-.0899	-.1552	17.18	11.16	.3648	2.86	9.52

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 10
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
35.84	14.70	.3552	4.66	13.62	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
36.41	4.65

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.08	8.86	-.3042	-.18	10.41	-.3828	.1385	.0046	-.0912	17.59	13.98	.3846	5.47	12.56
24	.05	11.97	-.4086	-.26	14.26	-.5304	.1790	-.0234	-.1346	17.80	13.38	.4059	5.16	11.50
36	.02	13.76	-.4628	-.43	15.99	-.5989	.2179	-.0645	-.1605	18.09	13.00	.4091	4.50	10.87
48	.07	14.93	-.4962	-.50	16.79	-.6361	.2383	-.0933	-.1803	18.36	12.72	.4031	3.98	10.48
60	.17	15.66	-.5160	-.49	17.23	-.6566	.2302	-.1105	-.1732	18.49	12.56	.4069	3.30	10.26
72	.31	16.42	-.5387	-.46	17.48	-.6667	.2372	-.1236	-.1763	18.61	12.36	.4086	3.06	10.14

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 11
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
39.39	15.56	.3474	4.86	14.67	930		39.98	4.63

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.06	9.05	-.2913	-.23	10.70	-.3646	.1464	-.0066	-.0801	19.51	14.88	.3730	5.48	13.64
24	.07	12.47	-.3983	-.34	14.75	-.5072	.1746	-.0258	-.1236	19.74	14.25	.3928	5.34	12.61
36	.09	14.19	-.4465	-.50	16.85	-.5845	.2094	-.0561	-.1569	20.15	13.89	.3941	5.04	11.86
48	.15	15.33	-.4774	-.59	17.91	-.6283	.2470	-.0956	-.1809	20.45	13.64	.3844	4.53	11.38
60	.24	16.27	-.5028	-.58	18.63	-.6573	.2411	-.1146	-.1762	20.56	13.43	.3900	3.79	11.04
72	.38	16.97	-.5237	-.56	19.03	-.6725	.2580	-.1368	-.1794	20.61	13.24	.3905	3.48	10.84

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 12
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
41.80	14.97	.3410	5.08	14.64	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
42.39	4.71

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.06	8.70	-.2884	-.19	9.94	-.3437	.1186	-.0032	-.0631	20.83	14.33	.3674	5.28	13.74
24	.09	11.62	-.3794	-.30	14.20	-.4938	.1438	-.0096	-.1065	21.26	13.83	.3884	5.82	12.70
36	.11	13.34	-.4280	-.45	16.54	-.5771	.1910	-.0505	-.1395	21.77	13.50	.3885	5.26	11.33
48	.22	14.47	-.4530	-.54	17.86	-.6236	.2232	-.0847	-.1593	22.36	13.32	.3829	4.79	11.42
60	.33	15.18	-.4711	-.58	18.88	-.6619	.2100	-.0940	-.1543	22.52	13.18	.3940	4.24	10.96
72	.45	15.87	-.4938	-.57	19.36	-.6793	.2180	-.1108	-.1550	22.49	13.00	.3987	3.85	10.73

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 13
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
42.03	13.53	.3206	4.86	12.79	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.11	8.29	-.3039	-.12	8.40	-.3350	.0680	.0278	-.0699
24	.15	11.05	-.4011	-.21	11.96	-.4815	.1424	.0022	-.1240
36	.16	12.74	-.4537	-.32	14.12	-.5693	.1929	-.0363	-.1553
48	.25	13.63	-.4701	-.36	15.29	-.6176	.2027	-.0525	-.1587
60	.40	14.14	-.4779	-.35	16.00	-.6487	.2178	-.0769	-.1589
72	.54	14.64	-.4859	-.33	16.38	-.6636	.2254	-.0808	-.1640

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	42.63	4.59

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
20.78	12.87	.3489	5.77	12.04
21.29	12.36	.3616	5.89	11.18
21.85	12.02	.3636	5.52	10.47
22.53	11.91	.3711	5.26	10.02
22.99	11.86	.3724	4.82	9.70
23.39	11.80	.3760	4.92	9.53

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 14
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
39.89	12.30	.3140	4.27	10.86	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
40.56	3.95

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.03	8.06	-.3310	-.09	6.74	-.3155	.1159	.0309	-.1051	19.42	11.58	.3398	5.90	10.28
24	.06	10.43	-.4274	-.14	9.42	-.4536	.1688	-.0036	-.1403	19.67	11.09	.3507	5.24	9.64
36	.11	11.93	-.4870	-.18	11.26	-.5446	.2120	-.0536	-.1569	19.82	10.72	.3538	4.43	9.08
48	.21	12.98	-.5108	-.23	12.47	-.6033	.2350	-.0892	-.1630	20.44	10.56	.3543	3.92	8.64
60	.39	13.50	-.5270	-.20	13.16	-.6356	.2644	-.1158	-.1796	20.85	10.44	.3470	3.86	8.36
72	.50	13.94	-.5337	-.17	13.49	-.6517	.2735	-.1232	-.1859	21.28	10.39	.3469	3.91	8.21

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 15
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
35.69	10.67	.2985	4.04	9.81	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.06	7.46	-.3541	-.04	6.65	-.3469	.0747	.0491	-.1071
24	.10	9.47	-.4465	-.10	8.68	-.4595	.1128	.0375	-.1408
36	.14	10.57	-.4949	-.16	10.18	-.5423	.1875	-.0282	-.1642
48	.20	11.54	-.5323	-.21	11.22	-.6006	.2295	-.0893	-.1758
60	.31	12.15	-.5538	-.22	11.98	-.6381	.2702	-.1281	-.1972
72	.42	12.40	-.5578	-.22	12.33	-.6554	.2686	-.1242	-.2024

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X: 36.28   GIVEN Y: 3.79

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
17.17	9.94	.3300	5.64	9.17
17.47	9.50	.3468	5.37	8.67
17.84	9.24	.3378	4.48	8.21
18.15	9.01	.3243	3.50	7.83
18.46	8.87	.3077	3.29	7.54
18.75	8.84	.3109	3.49	7.39

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 16
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	30.67	9.25	.2726	3.56	8.47	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.04	7.15	-.3909	-.04	5.90	-.3561	.0742	.0815	-.1564
24	.07	8.31	-.4566	-.11	7.56	-.4630	.0913	.0785	-.1680
36	.10	9.38	-.5096	-.15	8.83	-.5457	.1542	.0194	-.1839
48	.18	10.10	-.5408	-.18	9.76	-.6030	.1886	-.0222	-.1934
60	.29	10.81	-.5739	-.19	10.53	-.6481	.2096	-.0733	-.1840
72	.41	10.99	-.5791	-.23	10.78	-.6634	.2262	-.0911	-.1911

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y		
	31.11	3.44		

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
14.64	8.43	.3050	5.73	7.87
14.74	8.14	.3214	5.52	7.44
15.17	7.90	.3145	4.60	7.05
15.54	7.73	.3077	4.07	6.71
15.70	7.55	.3040	3.20	6.43
15.87	7.52	.2954	3.07	6.32

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 17
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
24.73	8.44	.2632	2.57	7.34	930		25.25	2.56

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.02	8.65	-.3949	-.05	5.31	-.3726	.0882	.0908	-.1790	11.89	7.66	.2921	4.66	6.75
24	.05	7.94	-.4751	-.10	6.59	-.4704	.0909	.0877	-.1928	11.85	7.32	.3076	4.21	6.40
36	.11	8.81	-.5227	-.12	7.74	-.5567	.1285	.0450	-.1945	12.16	7.11	.3087	3.60	6.03
48	.17	9.59	-.5623	-.13	8.59	-.6183	.1158	.0200	-.1704	12.31	6.92	.3253	2.91	5.73
60	.30	9.69	-.5648	-.13	9.14	-.6543	.1411	-.0146	-.1722	12.51	6.92	.3136	2.63	5.52
72	.42	10.20	-.5945	-.15	9.42	-.6732	.1517	-.0390	-.1702	12.57	6.75	.3146	2.29	5.41

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 18
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
18.31	7.79	.2965	1.82	5.82	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
18.75	1.89

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.01	6.60	-.4261	-.03	4.44	-.3864	.1799	.0250	-.1859	8.95	7.00	.3193	2.42	5.34
24	.04	7.35	-.4746	-.06	5.40	-.4763	.1818	.0581	-.2365	9.04	6.75	.3306	2.98	5.05
36	.13	8.35	-.5355	-.07	6.29	-.5645	.1968	.0327	-.2496	9.15	6.48	.3380	2.69	4.73
48	.19	8.94	-.5711	-.08	6.94	-.6229	.1874	.0044	-.2243	9.17	6.33	.3557	2.27	4.50
60	.30	9.49	-.6035	-.06	7.49	-.6697	.1988	-.0303	-.2266	9.28	6.15	.3522	1.99	4.28
72	.42	9.78	-.6136	-.07	7.75	-.6885	.2055	-.0644	-.2099	9.44	6.12	.3495	1.66	4.20

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 19
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
12.73	7.35	.2669	1.07	4.55	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.01	6.74	-.4582	-.01	3.76	-.4084	.2438	.0008	-.2291
24	.06	7.59	-.5201	-.01	4.35	-.4837	.2571	-.0057	-.2703
36	.11	8.07	-.5553	-.03	5.07	-.5672	.2195	.0086	-.2670
48	.16	8.64	-.5960	-.02	5.60	-.6283	.1680	-.0184	-.2244
60	.23	8.86	-.6073	-.03	5.90	-.6516	.1947	-.0298	-.2141
72	.30	9.18	-.6231	-.05	6.14	-.6855	.1776	-.0463	-.1974

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	13.02	1.25

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
6.35	6.47	.2709	1.35	4.13
6.36	6.19	.2650	1.38	3.94
6.32	6.01	.2783	1.40	3.69
6.26	5.84	.2988	1.10	3.51
6.33	5.79	.3065	1.03	3.38
6.41	5.71	.3153	.89	3.29

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 20
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8.73	6.82	.2940	.55	3.84	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.01	5.98	-.4395	-.00	3.69	-.4806	.2329	-.0343	-.1751
24	.05	6.77	-.5047	.01	3.80	-.5034	.2441	-.0504	-.2085
36	.09	7.23	-.5399	.01	4.33	-.5776	.2246	-.0410	-.2210
48	.15	7.62	-.5726	.01	4.55	-.6058	.2143	-.0537	-.2145
60	.19	7.80	-.5853	-.01	4.93	-.6539	.2256	-.0881	-.2071
72	.25	8.00	-.5976	-.02	5.05	-.6668	.2086	-.0993	-.1848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	8.70	.66

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
4.45	6.11	.3103	.66	3.36
4.42	5.86	.3030	.59	3.31
4.43	5.70	.3130	.63	3.12
4.41	5.56	.3196	.55	3.04
4.43	5.51	.3160	.46	2.90
4.46	5.45	.3261	.37	2.86

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 21
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
6.45	7.06	.2309	.23	3.61	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.00	6.39	-.4529	.03	3.99	-.5527	.1234	-.0413	-.0785
24	.01	6.71	-.4804	.01	4.07	-.5646	.1464	-.0552	-.1016
36	.06	7.19	-.5138	.02	4.47	-.6129	.1518	.0075	-.1627
4C	.12	7.51	-.5383	.02	4.55	-.6175	.1568	-.0463	-.1311
60	.15	7.58	-.5393	.05	4.91	-.6713	.1732	-.0634	-.1429
72	.16	8.10	-.5702	.03	4.96	-.6745	.1970	-.0865	-.1588

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y		
	6.25	.35		

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.34	6.29	.2688	.17	3.01
3.31	6.19	.2580	.15	2.98
3.37	6.03	.2714	.38	2.83
3.37	5.94	.2676	.22	2.84
3.42	5.93	.2622	.24	2.67
3.46	5.79	.2479	.20	2.66

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 22
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.32	7.75	.2506	.29	3.72	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.97	.51

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.01	8.35	-.4105	.02	4.05	-.5459	.1474	-.0319	-.0984		2.84	7.06	.2841	.19	3.11
24	.01	7.12	-.4578	.01	3.93	-.5294	.1611	-.0722	-.0873		2.85	6.89	.2789	.08	3.15
36	.03	7.36	-.4741	.02	4.69	-.6305	.1305	-.0900	-.0614		2.86	6.82	.3047	.03	2.88
48	.05	7.44	-.4759	.02	4.50	-.6031	.2105	-.1013	-.1267		2.89	6.81	.2657	.11	2.96
60	.09	9.02	-.5140	.02	4.95	-.6570	.2088	-.1167	-.1314		2.90	6.65	.2703	.10	2.80
72	.11	8.45	-.5422	.01	4.82	-.6377	.2350	-.1235	-.1584		2.92	6.51	.2531	.10	2.86

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 23
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
4.93	8.30	.2469	.54	3.95	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.29	.85

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	5.74	-.3500	.02	4.05	-.5150	.0951	-.0775	-.0220	2.74	7.78	.2810	.05	3.38
24	-.06	6.35	-.3869	.05	4.09	-.5248	.1420	-.0923	-.0527	2.72	7.66	.2706	.09	3.36
36	-.05	6.71	-.4078	.09	4.56	-.5854	.1805	-.0867	-.0990	2.73	7.58	.2657	.21	3.20
48	-.06	7.07	-.4321	.09	4.66	-.6012	.1925	-.1280	-.0977	2.71	7.49	.2533	.12	3.15
60	.01	7.74	-.4719	.10	5.21	-.6686	.2151	-.1715	-.1046	2.76	7.32	.2501	.11	2.93
72	.07	8.16	-.4971	.11	5.14	-.6605	.2355	-.1826	-.1238	2.79	7.21	.2331	.11	2.96

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JANUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 24
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.18	9.13	.2078	.84	3.88	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.35	1.00

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.06	5.63	-.3093	.02	4.07	-.5257	.2071	-.0886	-.0779	2.96	8.68	.2137	.21	3.30
24	-.11	6.36	-.3508	.03	4.09	-.5269	.1932	-.1201	-.0593	2.94	8.55	.2135	.10	3.29
36	-.10	7.08	-.3914	.07	4.69	-.5922	.1982	-.1289	-.0795	2.93	8.40	.2104	.15	3.12
48	-.11	7.56	-.4216	.10	4.67	-.5841	.2436	-.1605	-.1064	2.90	8.28	.1873	.16	3.15
60	-.06	8.14	-.4544	.11	5.06	-.6354	.2793	-.1862	-.1348	2.93	8.13	.1716	.19	2.99
72	-.03	8.51	-.4766	.13	4.99	-.6272	.2289	-.1695	-.1139	2.93	8.02	.1817	.16	3.02

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JANUARY
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 25
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
6.23	9.64	.1660	.81	4.17	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
5.43	1.18

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.03	5.68	-.2913	.00	4.07	-.4904	.1181	-.0441	-.0415	3.52	9.22	.1795	.27	3.63
24	-.05	5.99	-.3093	.01	4.21	-.5078	.1532	-.0922	-.0362	3.52	9.17	.1748	.17	3.59
36	-.08	7.05	-.3631	-.00	4.72	-.5684	.1303	-.0754	-.0436	3.50	8.98	.1836	.21	3.43
48	-.08	7.44	-.3864	-.02	4.78	-.5776	.2182	-.1486	-.0562	3.50	8.89	.1658	.14	3.40
60	-.06	8.77	-.4303	-.03	5.25	-.6316	.2227	-.1691	-.0622	3.51	8.69	.1635	.13	3.23
72	-.05	8.67	-.4563	-.05	5.27	-.6344	.2708	-.2052	-.0863	3.47	8.57	.1394	.11	3.22

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 26
ALPHA ANGLE   – 90.C

X = U(AT T)
Y = -V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
7.60	11.16	.1782	1.04	4.60	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
6.87	1.43

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.07	6.13	-.2703	.00	4.47	-.4850	.1590	-.1158	-.0254	4.21	10.74	.1847	.13	4.02
24	-.14	7.29	-.3177	-.04	4.59	-.4980	.2111	-.1677	-.0310	4.24	10.57	.1737	.04	3.98
36	-.18	8.29	-.3697	-.03	5.35	-.5759	.1866	-.1812	-.0316	4.15	10.36	.1750	.04	3.74
48	-.20	8.66	-.3916	-.02	5.19	-.5602	.2484	-.1994	-.0625	4.07	10.26	.1568	.10	3.80
60	-.20	9.41	-.4254	-.02	5.82	-.6283	.2681	-.2418	-.0688	4.06	10.09	.1470	.07	3.56
72	-.20	10.04	-.4566	-.03	5.73	-.6166	.2674	-.2556	-.0539	4.06	9.90	.1416	.03	3.59

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JANUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 27
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8.20	12.53	.1350	1.56	5.28	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	7.40	2.08

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.06	6.31	-.2500	-.00	4.77	-.4500	.1583	-.1087	-.0263	4.54	12.13	.1317	.29	4.71
24	-.15	7.66	-.2969	-.07	5.17	-.5080	.1990	-.1757	-.0250	4.64	11.96	.1217	.07	4.53
36	-.15	8.63	-.3446	-.07	5.80	-.5667	.2039	-.1973	-.0338	4.52	11.75	.1132	.09	4.33
48	-.19	9.41	-.3772	-.05	5.93	-.5801	.2782	-.2377	-.0646	4.47	11.59	.0904	.15	4.28
60	-.23	10.26	-.4084	-.08	6.44	-.6251	.3082	-.2840	-.0690	4.48	11.41	.0749	.11	4.09
72	-.19	10.91	-.4375	-.10	6.65	-.6370	.2902	-.2897	-.0613	4.50	11.24	.0701	.09	4.03

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) - CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1	1/56 - 12/70	0	90.0	.66	2.90	-.2412	-.95	3.30	930
1	1/56 - 12/70	1	90.0	2.73	7.02	.0092	.74	6.31	930
1	1/56 - 12/70	2	90.0	7.03	7.06	.0462	1.10	6.40	930
1	1/56 - 12/70	3	90.0	10.75	7.37	.0949	1.30	7.21	930
1	1/56 - 12/70	4	90.0	14.36	8.10	.1485	1.72	7.91	930
1	1/56 - 12/70	5	90.0	18.02	9.09	.2007	2.15	8.72	930
1	1/56 - 12/70	6	90.0	21.68	9.80	.2295	2.80	9.58	930
1	1/56 - 12/70	7	90.0	25.23	10.93	.2790	3.42	10.67	930
1	1/56 - 12/70	8	90.0	28.68	11.95	.3017	3.75	11.74	930
1	1/56 - 12/70	9	90.0	32.14	13.29	.3108	4.17	12.79	930
1	1/56 - 12/70	10	90.0	35.84	14.70	.3652	4.66	13.62	930
1	1/56 - 12/70	11	90.0	39.39	15.56	.3474	4.86	14.67	930
1	1/56 - 12/70	12	90.0	41.80	14.97	.3410	5.08	14.64	930
1	1/56 - 12/70	13	90.0	42.03	13.53	.3206	4.86	12.79	930
1	1/56 - 12/70	14	90.0	39.89	12.30	.3140	4.27	10.86	930
1	1/56 - 12/70	15	90.0	35.69	10.67	.2985	4.04	9.81	930
1	1/56 - 12/70	16	90.0	30.67	9.25	.2726	3.56	8.47	930
1	1/56 - 12/70	17	90.0	24.73	8.44	.2632	2.57	7.34	930
1	1/56 - 12/70	18	90.0	18.31	7.79	.2965	1.82	5.82	930
1	1/56 - 12/70	19	90.0	12.73	7.35	.2669	1.07	4.55	930
1	1/56 - 12/70	20	90.0	8.73	6.82	.2940	.55	3.84	930
1	1/56 - 12/70	21	90.0	6.45	7.06	.2309	.23	3.61	930
1	1/56 - 12/70	22	90.0	5.32	7.75	.2506	.29	3.72	930
1	1/56 - 12/70	23	90.0	4.93	8.30	.2469	.54	3.95	930
1	1/56 - 12/70	24	90.0	5.18	9.13	.2076	.64	3.88	930
1	1/56 - 12/70	25	90.0	6.23	9.64	.1660	.81	4.17	930
1	1/56 - 12/70	26	90.0	7.60	11.16	.1782	1.04	4.60	930
1	1/56 - 12/70	27	90.0	8.20	12.53	.1350	1.56	5.28	930

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - FEBRUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 0
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.55	3.26	-.2792	-.30	3.60	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.00	3.44	-.5235	.00	3.63	-.5050	-.2378	.3533	-.1215
24	.00	3.89	-.5887	-.02	4.60	-.6427	-.2290	.3349	-.0476
36	.00	4.35	-.6642	-.04	5.11	-.7149	-.2458	-.2788	.0640
48	-.03	4.33	-.6593	-.04	5.16	-.7217	-.2357	.2045	.1215
60	-.04	4.47	-.6818	-.02	5.26	-.7292	-.2534	.2201	.1392
72	-.03	4.48	-.6797	-.01	5.16	-.7154	-.2508	.2027	.1544

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.45	-.09

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.32	2.65	-.3025	-.14	2.98
.32	2.56	-.3276	-.19	2.67
.32	2.41	-.3171	-.23	2.49
.31	2.45	-.3246	-.26	2.49
.30	2.38	-.3070	-.25	2.46
.31	2.39	-.2985	-.25	2.51

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

```
STATION (12868)   - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD   - FEBRUARY              Y  = V(AT T)
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     -  1                    XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE       -  90.0                 YP = V(AT T + DT) - V(AT T)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.81	7.22	-.0335	1.72	6.61	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.03	5.96	-.4039	.03	6.25	-.4730	-.0308	.4370	-.3562
24	.08	8.38	-.5756	.01	8.33	-.6278	.0084	.2883	-.2631
36	.05	9.59	-.6676	.01	9.22	-.6945	.0369	.1355	-.1784
48	.05	9.81	-.6833	.03	9.29	-.6996	.0724	.0272	-.1232
60	.07	10.02	-.7003	.04	9.32	-.7014	.0568	.0126	-.0862
72	.09	10.24	-.7182	.05	9.45	-.7152	.0340	.0121	-.0524

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
3.65	2.35

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.00	6.04	-.0411	2.29	5.11
1.48	5.55	-.0774	1.37	4.77
1.74	5.26	-.0994	.94	4.64
1.88	5.24	-.1298	.74	4.70
1.93	5.14	-.1134	.69	4.70
1.99	5.02	-.0925	.65	4.62

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - FEBRUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 2
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	8.15	7.73	-.0181	1.51	6.70	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.07	5.99	-.3751	.06	8.02	-.4485	-.0089	.3654	-.3051
24	.14	8.05	-.5154	.05	7.91	-.5885	.0267	.2606	-.2599
36	.13	9.19	-.5966	.03	8.89	-.6590	.0602	.1433	-.1964
48	.12	9.69	-.6287	.05	9.17	-.6793	.0731	.0656	-.1497
60	.16	10.02	-.6552	.06	9.33	-.6923	.0739	.0442	-.1287
72	.15	10.35	-.6812	.04	9.56	-.7160	.0621	.0232	-.0966

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	8.02	2.08

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.47	6.76	-.0257	3.73	5.48
3.80	6.35	-.0490	2.30	5.09
3.96	6.08	-.0700	1.53	4.89
4.05	5.96	-.0664	1.12	4.86
4.07	5.81	-.0844	1.00	4.80
4.07	5.65	-.0816	.82	4.66

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - FEBRUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 3
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
12.05	8.26	.0079	1.75	7.36	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.07	6.00	-.3558	.09	6.34	-.4308	.1391	.2659	-.3197
24	.14	7.95	-.4779	.07	8.41	-.5692	.1315	.1922	-.2908
36	.20	8.92	-.5500	.04	9.31	-.6273	.1327	.1094	-.2351
48	.23	9.37	-.5808	.04	9.66	-.6519	.1226	.0610	-.1885
60	.25	9.69	-.6046	.04	9.88	-.6719	.1081	.0506	-.1609
72	.25	10.13	-.6332	.02	10.21	-.6991	.1006	.0259	-.1331

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X		GIVEN Y	
	11.81		2.40	

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
6.09	7.38	-.0351	5.26	6.18
6.10	7.00	-.0580	3.45	5.71
6.03	6.76	-.0613	2.41	5.55
6.03	6.65	-.0588	1.85	5.48
6.01	6.53	-.0468	1.64	5.37
6.02	6.37	-.0456	1.35	5.21

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — FEBRUARY
PERIOD OF RECORD — 1/56 — 12/70
LTITUDE (KM)   — 4
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) — U(AT T)
YP = V(AT T + DT) — V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	15.46	9.18	-.0035	2.26	8.05	848		14.92	2.95

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.10	8.19	-.3345	.10	6.97	-.4314	.1209	.2561	-.2775	7.85	8.37	-.0376	6.75	6.82
24	.18	8.26	-.4460	.13	8.96	-.5488	.1310	.1796	-.2711	8.00	7.98	-.0682	4.46	6.41
36	.22	9.3ſ	-.5137	.12	9.97	-.6058	.0979	.1245	-.2077	7.82	7.74	-.0579	3.20	6.23
48	.27	9.79	-.5490	.09	10.43	-.6335	.0871	.0959	-.1746	7.75	7.58	-.0524	2.67	6.11
60	.29	10.24	-.5802	.05	10.85	-.6609	.0748	.0907	-.1539	7.69	7.41	-.0422	2.43	5.93
72	.29	10.93	-.6216	.03	11.00	-.6784	.0745	.0496	-.1203	7.71	7.16	-.0413	1.38	5.96

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - FEBRUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 5
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	19.12	10.18	.0155	2.64	8.97	848	18.45	3.43

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.14	6.28	-.3046	.09	7.71	-.4285	.0873	.2585	-.2351	9.68	9.46	-.0006	8.69	7.65
24	.28	8.61	-.4163	.13	9.95	-.5447	.1126	.1815	-.2364	9.99	9.05	-.0244	5.59	7.19
36	.34	9.91	-.4874	.16	10.96	-.5955	.0816	.1361	-.1875	9.83	8.76	-.0125	4.05	7.01
48	.41	10.59	-.5302	.16	11.42	-.6218	.0745	.1098	-.1605	9.73	8.54	-.0045	3.41	6.88
60	.43	11.21	-.5680	.11	11.82	-.6438	.0823	.0871	-.1502	9.67	8.31	-.0046	3.02	6.74
72	.43	11.83	-.6061	.11	11.86	-.6540	.0820	.0645	-.1290	9.59	8.06	.0033	2.59	6.70

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - FEBRUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 6
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
23.14	11.15	.0938	3.18	9.51	848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
22.34	4.08

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.16	8.83	-.2951	.12	8.04	-.4223	.1126	.1997	-.2114	12.21	10.46	.0985	8.81	8.29
24	.32	9.38	-.4085	.14	10.45	-.5411	.1382	.1313	-.2174	12.35	10.01	.0760	5.83	7.75
36	.39	10.69	-.4764	.18	11.52	-.5851	.1246	.0876	-.1897	12.12	9.69	.0819	4.42	7.56
48	.47	11.43	-.5222	.18	12.05	-.6113	.1262	.0568	-.1754	11.91	9.43	.0828	3.72	7.42
60	.52	12.18	-.5592	.14	12.44	-.6322	.1362	.0315	-.1717	11.90	9.18	.0794	3.27	7.28
72	.54	12.76	-.5921	.09	12.54	-.6409	.1487	.0104	-.1702	11.80	8.94	.0754	2.95	7.23

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - FEBRUARY   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 7   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                              FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N			GIVEN X	GIVEN Y
	26.69	12.53	.1524	3.58	10.33	848			25.96	4.49

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.19	7.45	-.2892	.13	8.77	-.4265	.1345	.1437	-.1811		14.30	11.86	.1552	8.56	9.11
24	.38	10.17	-.3989	.21	11.46	-.5517	.1702	.0735	-.1961		14.41	11.38	.1447	5.82	8.44
36	.49	11.69	-.4664	.26	12.73	-.6003	.1790	.0249	-.1916		14.23	11.00	.1395	4.51	8.15
48	.57	12.57	-.5159	.27	13.36	-.6270	.1677	.0008	-.1736		13.87	10.68	.1471	3.75	7.97
60	.61	13.30	-.5543	.25	13.62	-.6489	.1663	-.0075	-.1705		13.66	10.38	.1538	3.50	7.79
72	.64	14.05	-.5874	.22	13.84	-.6507	.1819	-.0291	-.1767		13.64	10.10	.1461	3.17	7.79

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - FEBRUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 8
ALPHA ANGLE - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
30.83	14.01	.1902	3.79	11.35	849		29.58	4.67

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.17	7.95	-.2793	.11	9.20	-.4059	.1513	.1184	-.1741		16.27	13.32	.1949	9.08	10.17
24	.38	10.86	-.3834	.14	12.33	-.5390	.1398	.0747	-.1704		16.19	12.83	.2018	6.11	9.41
36	.48	12.66	-.4588	.17	14.00	-.6021	.1471	.0187	-.1630		15.87	12.37	.2000	4.40	8.98
48	.56	13.81	-.5135	.20	14.83	-.6345	.1579	-.0144	-.1611		15.54	11.97	.1995	3.67	8.72
60	.58	14.65	-.5559	.17	15.24	-.6514	.1702	-.0298	-.1696		15.26	11.60	.1981	3.43	8.56
72	.62	15.44	-.5890	.13	15.40	-.6595	.1722	-.0406	-.1681		15.18	11.28	.2015	3.14	8.49

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - FEBRUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 9
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
34.59	15.74	.2343	4.11	12.35	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.16	8.65	-.2735	.11	9.76	-.3941	.1672	.0609	-.1442
24	.38	11.56	-.3698	.11	13.30	-.5312	.1652	.0180	-.1513
36	.48	13.43	-.4403	.17	15.09	-.5921	.1650	-.0207	-.1470
48	.59	14.85	-.4952	.20	16.04	-.6278	.1762	-.0446	-.1542
60	.66	15.86	-.5393	.17	16.41	-.6423	.1910	-.0655	-.1621
72	.71	16.71	-.5716	.11	16.65	-.6521	.1896	-.0715	-.1662

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
33.44	4.88

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
18.28	15.06	.2412	7.80	11.24
18.10	14.55	.2463	5.53	10.39
17.69	14.08	.2511	4.18	9.91
17.45	13.63	.2521	3.67	9.58
17.18	13.23	.2495	3.31	9.44
17.04	12.88	.2506	3.08	9.34

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - FEBRUARY   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 10   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP									CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N					GIVEN X	GIVEN Y		
	38.27	16.92	.2549	4.15	13.76	848					36.89	4.76		
DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.16	8.93	-.2686	.12	10.56	-.3807	.1337	.0131	-.0890	19.68	16.27	.2679	5.49	12.69
24	.39	12.26	-.3703	.12	14.57	-.5221	.1544	-.0236	-.1110	19.75	15.69	.2757	4.22	11.71
36	.58	14.38	-.4409	.25	16.47	-.5875	.1881	-.0711	-.1322	19.60	15.16	.2680	3.33	11.12
48	.74	15.68	-.4893	.30	17.53	-.6230	.1980	-.0940	-.1374	19.32	14.74	.2692	2.91	10.76
60	.86	16.62	-.5248	.32	17.93	-.6364	.2051	-.1072	-.1422	19.14	14.39	.2690	2.69	10.61
72	.98	17.47	-.5504	.27	18.07	-.6421	.1958	-.1073	-.1414	19.22	14.11	.2723	2.48	10.55

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — FEBRUARY
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM) — 11
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
42.03	17.71	.2767	4.15	14.98	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.16	9.27	-.2675	.12	11.02	-.3692	.1048	-.0150	-.0588
24	.32	12.62	-.3702	.11	15.33	-.5076	.1337	-.0467	-.0825
36	.46	14.68	-.4390	.27	17.76	-.5842	.1735	-.0837	-.1083
48	.61	15.90	-.4831	.32	18.85	-.6142	.1962	-.0969	-.1310
60	.75	5.96	-.5178	.30	19.18	-.6237	.2126	-.1126	-.1435
72	.87	17.93	-.5452	.22	19.28	-.6271	.2034	-.1203	-.1405

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	40.48	4.70

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
21.45	17.05	.2920	3.39	13.91
21.24	16.44	.3034	2.88	12.90
20.96	15.90	.3035	2.69	12.15
20.74	15.49	.3007	2.91	11.81
20.72	15.14	.2956	2.72	11.70
20.81	14.83	.2951	2.21	11.66

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — FEBRUARY
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 12
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) — U(AT T)
YP = V(AT T + DT) — V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
44.66	17.25	.2765	4.30	14.65	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.11	9.55	-.2847	.12	10.08	-.3471	.0803	-.0306	-.0357
24	.22	12.54	-.3808	.16	14.28	-.4901	.1435	-.0663	-.0724
36	.34	14.36	-.4445	.23	16.70	-.5701	.1833	-.0852	-.1110
48	.40	15.44	-.4896	.27	17.94	-.6104	.1944	-.0974	-.1226
60	.47	16.23	-.5194	.23	18.33	-.6240	.2152	-.1103	-.1406
72	.53	17.12	-.5461	.18	18.39	-.6278	.2273	-.1248	-.1518

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	43.16	4.82

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
22.50	16.54	.2930	1.75	13.74
22.22	15.95	.3010	2.16	12.77
21.95	15.44	.3016	2.87	12.03
21.40	15.03	.3072	2.91	11.60
21.25	14.73	.3015	2.96	11.44
21.36	14.44	.2929	2.65	11.40

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 13
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
44.51	15.90	.3462	4.25	12.82	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.05	9.67	-.3100	.09	8.95	-.3498	.1660	-.0600	-.0592
24	.11	11.93	-.3867	.15	12.32	-.4787	.2072	-.0952	-.0971
36	.26	13.59	-.4479	.18	14.47	-.5611	.2462	-.1205	-.1382
48	.31	14.39	-.4918	.21	15.53	-.6008	.2933	-.1633	-.1758
60	.29	15.13	-.5224	.14	15.86	-.6137	.2947	-.1628	-.1923
72	.26	15.93	-.5544	.08	15.96	-.6191	.2866	-.1623	-.1996

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y		
	43.27	4.70		

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
22.50	15.12	.3647	1.83	12.01
22.37	14.66	.3721	2.18	11.26
22.20	14.21	.3689	2.42	10.61
21.49	13.83	.3548	2.56	10.25
21.28	13.54	.3531	2.69	10.12
21.05	13.22	.3537	2.51	10.07

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — FEBRUARY
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM)   — 14
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) — U(AT T)
YP = V(AT T + DT) — V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
41.43	13.82	.3179	3.82	11.13	848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	40.23	4.23

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.08	9.07	-.3254	.09	7.75	-.3475	.1903	-.0328	-.1049	21.71	13.05	.3299	3.42	10.43
24	.14	10.98	-.3950	.14	10.57	-.4720	.2246	-.0545	-.1476	21.87	12.67	.3320	3.94	9.79
36	.25	12.65	-.4562	.14	12.52	-.5553	.2549	-.0985	-.1741	21.92	12.27	.3258	3.38	9.24
48	.24	13.40	-.4997	.17	13.63	-.5989	.2900	-.1411	-.1974	21.28	11.94	.3115	2.97	8.90
60	.18	13.99	-.5288	.08	14.02	-.6215	.2700	-.1336	-.2006	20.93	11.70	.3180	2.92	8.71
72	.22	14.64	-.5562	.03	14.19	-.6280	.2569	-.1263	-.2046	20.80	11.45	.3234	2.86	8.65

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 15
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
36.59	11.99	.2316	3.12	9.31	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.02	8.17	-.3345	.09	6.58	-.3541	.1211	.0366	-.1230
24	.14	9.70	-.3997	.15	8.91	-.4715	.1721	.0098	-.1542
36	.26	10.86	-.4501	.19	10.40	-.5482	.2205	-.0560	-.1628
48	.27	11.51	-.4881	.25	11.06	-.5798	.2579	-.1005	-.1802
60	.27	12.14	-.5218	.22	11.47	-.6031	.2463	-.0880	-.1965
72	.27	12.68	-.5472	.21	11.80	-.6193	.2524	-.0898	-.2139

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	35.54	3.51

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
19.15	11.26	.2445	4.62	8.68
19.35	10.94	.2423	4.59	8.17
19.37	10.68	.2298	3.51	7.76
19.00	10.45	.2122	2.99	7.57
18.78	10.20	.2124	3.21	7.41
18.74	9.99	.2059	3.30	7.28

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - FEBRUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 16
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
31.60	10.60	.1868	2.82	8.17	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.00	7.32	-.3391	.05	5.87	-.3619	.0940	.0680	-.1448
24	.06	8.10	-.4219	.07	7.79	-.4716	.1171	.0603	-.1719
36	.13	10.26	-.4788	.09	9.05	-.5425	.1408	.0047	-.1628
48	.14	10.88	-.5187	.11	9.82	-.5876	.1678	-.0544	-.1525
60	.15	11.14	-.5388	.11	10.28	-.6159	.1788	-.0734	-.1553
72	.11	11.63	-.5617	.16	10.50	-.6275	.1765	-.0669	-.1637

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	30.66	3.13

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
16.37	9.90	.1940	4.75	7.57
16.55	9.52	.1946	4.48	7.14
16.58	9.25	.1866	3.31	6.83
16.28	9.04	.1736	2.37	6.60
16.08	8.91	.1671	2.17	6.43
16.08	8.75	.1687	2.32	6.35

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 17
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
25.58	9.47	.1912	2.08	6.94	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.01	7.21	-.3795	.05	5.34	-.3805	.1507	.0274	-.1518
24	.03	8.58	-.4470	.07	6.72	-.4728	.1655	.0126	-.1721
36	.07	9.34	-.4903	.07	7.70	-.5367	.1560	-.0177	-.1557
48	.07	10.22	-.5436	.09	8.31	-.5779	.1795	-.0681	-.1532
60	-.00	10.40	-.5602	.09	8.63	-.6012	.1732	-.0825	-.1402
72	-.01	10.60	-.5819	.12	8.89	-.6152	.1694	-.0700	-.1496

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
24.78	2.20

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
13.33	8.72	.1940	3.04	6.39
13.51	8.42	.1912	2.88	6.08
13.40	8.22	.1907	2.27	5.84
13.22	7.93	.1783	1.67	5.66
13.00	7.84	.1800	1.42	5.54
13.00	7.69	.1859	1.63	5.47

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — FEBRUARY
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 18
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
19.13	8.67	.3013	1.41	5.66	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.00	7.69	-.4407	.05	4.51	-.4015	.2196	.0029	-.2002
24	.00	8.58	-.4858	.09	5.52	-.4825	.2184	-.0156	-.2119
36	-.01	9.37	-.5311	.10	6.32	-.5454	.2232	-.0665	-.2046
48	.03	9.97	-.5672	.11	6.85	-.5885	.2086	-.0830	-.2000
60	-.00	10.34	-.5974	.12	7.05	-.6031	.2126	-.1065	-.1901
72	-.04	10.74	-.6286	.14	7.15	-.6116	.2065	-.1181	-.1762

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
18.46	1.43

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
10.17	7.73	.3187	1.98	5.15
10.29	7.52	.3183	1.87	4.93
10.24	7.31	.3092	1.40	4.73
10.18	7.10	.3105	1.20	4.57
10.00	6.93	.3128	1.01	4.51
9.81	6.73	.3233	.87	4.47

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 19
ALPHA ANGLE – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
13.20	7.97	.2650	1.01	4.55	848		12.40	1.10

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	6.97	-.4324	.06	4.07	-.4512	.1675	-.0051	-.1464	7.07	7.16	.2859	1.06	4.05
24	-.05	7.87	-.4864	.07	4.58	-.5031	.1822	-.0242	-.1597	7.10	6.94	.2887	.98	3.92
36	-.09	8.35	-.5155	.09	5.20	-.5703	.1957	-.0554	-.1641	7.10	6.01	.2852	.89	3.73
48	-.11	8.96	-.5528	.08	5.61	-.6151	.2212	-.0949	-.1765	7.11	6.63	.2730	.77	3.58
60	-.13	9.62	-.5994	.10	5.81	-.6351	.2300	-.1003	-.2018	7.05	6.36	.2660	.79	3.51
72	-.18	9.60	-.6046	.12	5.95	-.6479	.2345	-.1290	-.1781	6.93	6.34	.2695	.66	3.47

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 20
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8.19	7.58	.2690	.70	3.95	848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
7.13	.76

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.03	6.94	-.4517	.03	4.09	-.5201	.1833	-.0773	-.1015	4.66	6.76	.2945	.40	3.38
24	-.03	7.61	-.4955	.02	4.35	-.5549	.2210	-.0646	-.1670	4.67	6.57	.2842	.54	3.28
36	-.06	7.95	-.5162	.01	4.86	-.6117	.1983	-.0534	-.1655	4.66	6.48	.3001	.56	3.12
48	-.09	7.85	-.5110	-.01	5.05	-.6383	.2329	-.0967	-.1644	4.65	6.51	.2884	.50	3.04
60	-.11	8.72	-.5657	-.02	5.25	-.6642	.2102	-.1101	-.1498	4.64	6.25	.3023	.40	2.95
72	-.13	8.79	-.5680	-.01	5.32	-.6749	.2123	-.1037	-.1604	4.64	6.23	.3020	.44	2.91

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - FEBRUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 21
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	5.46	7.47	.2325	.20	4.41	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.03	6.40	-.4298	.01	4.50	-.5083	.1395	-.0464	-.0825
24	-.06	7.05	-.4717	.01	4.81	-.5459	.1502	-.0604	-.0926
36	-.12	7.69	-.5120	-.03	5.62	-.6435	.1372	-.0502	-.1076
48	-.20	7.91	-.5229	-.01	5.56	-.6452	.1488	-.0399	-.1318
60	-.19	8.24	-.5456	-.00	5.81	-.6747	.1565	-.0332	-.1565
72	-.28	8.33	-.5448	-.00	5.71	-.6621	.1693	-.0245	-.1758

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	4.02	.01

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.44	6.74	.2587	.28	3.79
3.44	6.58	.2601	.26	3.69
3.42	6.41	.2783	.28	3.37
3.41	6.36	.2717	.33	3.36
3.42	6.24	.2700	.36	3.24
3.41	6.23	.2619	.40	3.28

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - FEBRUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 22
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
4.26	7.90	.2223	-.12	4.06	848	2.46	-.45

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.02	6.50	-.4107	.00	4.34	-.5305	.1048	-.0122	-.0768	3.06	7.20	.2583	.18	3.44
24	-.06	6.83	-.4359	-.02	4.38	-.5331	.1854	-.0322	-.1357	3.06	7.10	.2354	.21	3.43
36	-.12	7.54	-.4815	-.02	5.10	-.6239	.1548	-.0435	-.1152	3.00	6.92	.2574	.17	3.17
48	-.14	7.68	-.4936	-.00	4.90	-.5964	.1657	-.0244	-.1441	3.01	6.85	.2486	.21	3.25
60	-.18	8.36	-.5365	.01	5.46	-.6711	.1348	-.0355	-.1207	2.97	6.66	.2737	.19	3.00
72	-.22	8.57	-.5455	.00	5.18	-.6368	.1790	-.0723	-.1425	2.97	6.61	.2391	.17	3.13

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD — FEBRUARY
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM)   — 23
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.74	8.06	.2440	.13	4.00	848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.70	-.18

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	6.40	-.3965	-.04	4.75	-.5878	.0930	-.0049	-.0621	2.89	7.40	.3065	.26	3.23
24	-.12	6.94	-.4314	-.08	3.94	-.4808	.1662	-.0295	-.1022	2.85	7.27	.2741	.24	3.50
36	-.17	7.54	-.4708	-.13	5.12	-.6316	.1537	-.0347	-.1029	2.82	7.11	.3054	.22	3.09
48	-.24	7.63	-.4794	-.16	4.65	-.5697	.1687	-.0374	-.1036	2.78	7.09	.2949	.21	3.28
60	-.31	7.95	-.4961	-.16	5.45	-.6698	.1959	-.0836	-.1095	2.74	7.00	.3019	.19	2.96
72	-.40	7.97	-.4955	-.17	5.15	-.6275	.2062	-.0948	-.0993	2.69	7.00	.2943	.18	3.11

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - FEBRUARY
PERIOD OF RECORD - 1/58 - 12/70
ALTITUDE (KM)   - 24
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
4.05	8.35	.2162	.26	3.81	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.03	6.20	-.3778	-.05	4.20	-.5467	.1174	-.0270	-.0679
24	-.03	6.70	-.4182	-.06	4.10	-.5303	.1498	-.0465	-.0853
36	-.08	7.18	-.4496	-.11	4.87	-.6468	.1318	-.0642	-.0657
48	-.05	7.43	-.4685	-.14	4.52	-.5961	.1538	-.0887	-.0556
60	-.08	7.60	-.4816	-.14	5.15	-.6828	.1635	-.1204	-.0575
72	-.09	8.01	-.5019	-.13	4.80	-.6397	.1804	-.1176	-.0675

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.82	-.02

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.11	7.73	.2493	.29	3.18
3.09	7.58	.2400	.27	3.23
3.05	7.46	.2689	.24	2.90
3.06	7.37	.2601	.20	3.06
3.04	7.31	.2698	.19	2.78
3.04	7.22	.2586	.20	2.93

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – FEBRUARY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 25
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U'AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
4.36	9.14	.2920	.06	3.70	848

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.94	-.33

DT AR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.07	6.08	-.3413	-.01	4.01	-.5418	.1634	-.0947	-.0514	3.32	8.59	.3317	.21	3.11
24	-.12	6.77	-.3852	-.03	3.90	-.5249	.0818	-.0600	-.0181	3.28	8.43	.3513	.19	3.15
36	-.15	7.37	-.4288	-.03	4.58	-.6182	.1606	-.1282	-.0502	3.23	8.26	.3501	.17	2.90
48	-.15	7.82	-.4556	-.05	4.60	-.6207	.1297	-.1069	-.0419	3.23	8.14	.3639	.17	2.90
60	-.19	8.07	-.4698	-.03	4.96	-.6704	.1710	-.1625	-.0535	3.20	8.07	.3572	.16	2.74
72	-.19	8.36	-.4844	-.03	4.82	-.6497	.1689	-.1648	-.0444	3.20	7.99	.3563	.15	2.80

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – FEBRUARY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 26
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	5.02	9.73	.2482	.12	3.94	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.03	6.10	-.3294	-.03	4.23	-.5427	.2304	-.1292	-.0692
24	-.07	6.66	-.3724	-.03	4.36	-.5610	.1756	-.1262	-.0458
36	-.12	7.28	-.4045	-.09	4.97	-.6475	.1135	-.1190	-.0150
48	-.16	7.80	-.4246	-.12	4.86	-.6341	.0762	-.0897	-.0013
60	-.20	8.37	-.4494	-.13	5.21	-.6781	.1053	-.1322	-.0068
72	-.25	8.83	-.4701	-.11	5.15	-.6784	.1321	-.1104	-.0229

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	2.52	-.26

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.68	9.19	.2640	.23	3.31
3.59	9.03	.2764	.19	3.26
3.57	8.90	.3164	.14	2.99
3.59	8.81	.3289	.13	3.04
3.58	8.69	.3305	.11	2.88
3.56	8.58	.3228	.13	2.88

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - FEBRUARY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 27
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.64	10.54	.1685	.23	3.98	848

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.04	6.52	-.3305	-.05	4.01	-.5068	.1314	-.0384	-.0523
24	-.07	7.26	-.3869	-.06	4.25	-.5409	.1354	-.0462	-.0640
36	-.17	7.64	-.4053	-.10	4.76	-.6068	.1067	-.0604	-.0401
48	-.14	7.92	-.4214	-.13	4.79	-.6137	.0617	-.0639	-.0073
60	-.14	8.65	-.4608	-.13	5.18	-.6636	.0573	-.0452	-.0303
72	-.20	8.99	-.4767	-.10	5.17	-.6777	.0829	-.0500	-.0522

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
3.06	-.10

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
4.00	9.95	.1861	.31	3.43
3.89	9.72	.1862	.30	3.35
3.84	9.64	.2008	.24	3.16
3.84	9.56	.2139	.17	3.14
3.85	9.35	.2185	.20	2.98
3.82	9.26	.2106	.24	2.93

BIVARIATE NORMAL STATISTICS OF X,Y

STATION (12868) - CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2	1/56 - 12/70	0	90.0	.55	3.26	-.2792	-.30	3.60	848
2	1/56 - 12/70	.	90.0	3.81	7.22	-.0335	1.72	6.61	848
2	1/56 - 12/70	2	90.0	8.15	7.73	-.0181	1.51	6.70	848
2	1/56 - 12/70	3	90.0	12.05	8.26	.0079	1.75	7.36	848
2	1/56 - 12/70	4	90.0	15.46	9.18	-.0035	2.26	8.05	848
2	1/56 - 12/70	5	90.0	19.12	10.18	.0155	2.84	8.97	848
2	1/56 - 12/70	6	90.0	23.14	11.15	.0938	3.18	9.51	848
2	1/56 - 12/70	7	90.0	26.89	12.53	.1524	3.58	10.33	848
2	1/56 - 12/70	8	90.0	30.63	14.01	.1902	3.79	11.35	848
2	1/56 - 12/70	9	90.0	34.59	15.74	.2343	4.11	12.35	848
2	1/56 - 12/70	10	90.0	38.27	16.92	.2549	4.15	13.76	848
2	1/56 - 12/70	11	90.0	42.03	17.71	.2767	4.15	14.98	848
2	1/56 - 12/70	12	90.0	44.66	17.25	.2765	4.30	14.65	848
2	1/56 - 12/70	13	90.0	44.51	15.90	.3462	4.25	12.92	848
2	1/56 - 12/70	14	90.0	41.43	13.82	.3179	3.82	11.13	848
2	1/56 - 12/70	15	90.0	36.59	11.99	.2316	3.12	9.31	048
2	1/56 - 12/70	16	90.0	31.60	10.60	.1868	2.82	8.17	848
2	1/56 - 12/70	17	90.0	25.58	9.47	.1912	2.08	6.94	848
2	1/56 - 12/70	18	90.0	19.13	8.67	.3013	1.41	5.66	848
2	1/56 - 12/70	19	90.0	13.20	7.97	.2650	1.01	4.55	848
2	1/56 - 12/70	20	90.0	8.19	7.58	.2690	.70	3.95	848
2	1/56 - 12/70	21	90.0	5.46	7.47	.2325	.20	4.41	848
2	1/56 - 12/70	22	90.0	4.26	7.90	.2223	-.12	4.06	848
2	1/56 - 12/70	23	90.0	3.74	8.06	.2440	.13	4.00	848
2	1/56 - 12/70	24	90.0	4.05	8.35	.2162	.26	3.81	848
2	1/56 - 12/70	25	90.0	4.36	9.14	.2920	.06	3.70	848
2	1/56 - 12/70	26	90.0	5.02	9.73	.2482	.12	3.94	848
2	1/56 - 12/70	27	90.0	5.64	10.54	.1685	.23	3.98	848

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 0
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.07	3.20	-.2107	.00	3.57	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.08	-.05

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.03	3.49	-.5422	.01	3.75	-.5241	-.2055	.3295	-.1136	.01	2.59	-.2095	.06	2.93
24	-.07	3.81	-.5890	.03	4.48	-.6239	-.1699	.3185	-.0924	-.00	2.51	-.2308	.07	2.68
36	-.08	4.38	-.6729	.01	4.99	-.6945	-.2128	.2797	.0248	-.01	2.34	-.1962	.05	2.52
48	-.09	4.43	-.6810	.02	5.06	-.7069	-.2168	.2262	.0895	-.02	2.34	-.1885	.05	2.51
60	-.10	4.62	-.7073	.03	5.13	-.7232	-.2480	.2024	.1656	-.02	2.26	-.1528	.05	2.46
72	-.13	4.52	-.6923	.01	5.09	-.7193	-.2393	.1970	.1480	-.04	2.31	-.1735	.04	2.48

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD   1/56 - 12/70
ALTITUDE (KM)   - 1
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.18	7.05	.0095	1.64	6.24	930

	GIVEN X	GIVEN Y
	3.22	1.70

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	5.96	-.4247	-.03	5.93	-.4733	.0096	.3927	-.3570	.83	5.88	.0122	2.13	4.91
24	-.11	8.29	-.5872	-.02	7.63	-.6097	.0069	.3015	-.2890	1.07	5.34	.0222	1.55	4.58
36	-.12	9.39	-.6605	-.03	8.60	-.6902	.0025	.1673	-.1535	1.31	5.18	.0295	1.1_	4.39
48	-.16	9.69	-.6810	-.08	8._	-.7084	.0022	.1001	-.0863	1.39	5.13	.0348	.97	4.36
60	-.21	9.85	-.683_	-.11	8.	-.7125	-.0032	.0528	-.0366	1.43	5.10	.0364	.84	4.3/
72	-.31	9.85	-.6903	-.15	8.76	-.7078	-.0142	.0398	-.0118	1.40	5.10	.0427	.77	4.40

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X. Y. XP. YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MARCH
.PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 2
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	7.28	7.30	.0412	1.31	6.13	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.10	5.78	-.3981	-.04	5.89	-.4811	.0163	.3448	-.2952
24	-.20	7.76	-.5273	-.02	7.31	-.5961	.0608	.2479	-.2736
36	-.25	8.99	-.6024	-.05	8.28	-.6764	.0326	.1584	-.1657
48	-.31	9.48	-.6288	-.10	8.55	-.7038	.0177	.0938	-.0868
60	-.39	9.69	-.6376	-.14	8.57	-.7043	.0173	.0573	-.0576
72	-.51	9.72	-.6359	-.17	8.67	-.7116	.0233	.0391	-.0482

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X		GIVEN Y	
	7.28		1.41	

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.10	6.35	.0542	3.33	4.92
3.33	5.94	.0388	2.26	4.61
3.44	5.72	.0660	1.50	4.38
3.51	5.65	.0861	1.07	4.31
3.54	5.61	.0827	.86	4.33
3.52	5.63	.0783	.79	4.30

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869) - CAPE KENNEDY
MONTH OF RECORD - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 3
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
10.87	8.27	.0818	1.28	6.64	930	10.73	1.34

DT HP	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.12	5.84	-.3511	-.05	6.07	-.4605	.1343	.2557	-.3002	5.52	7.45	.0591	4.51	5.49
24	-.22	7.90	-.4719	-.04	7.65	-.5788	.1580	.1651	-.2840	5.53	7.08	.0451	2.96	5.13
36	-.32	9.18	-.5385	-.02	8.57	-.6506	.1247	.0850	-.2025	5.50	6.88	.0595	1.92	4.92
48	-.41	9.77	-.5668	-.05	8.97	-.6828	.0948	.0316	-.1275	5.50	6.79	.0819	1.31	4.81
60	-.49	10.13	-.5819	-.11	9.17	-.6940	.0662	.0129	-.0810	5.51	6.72	.1023	.98	4.76
72	-.59	10.41	-.5976	-.16	9.27	-.6987	.0504	.0099	-.0608	5.47	6.63	.1158	.86	4.74

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 4
ALPHA ANGLE   - 30.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. Y	R (X,Y)	MEAN Y	S.D. Y	N
14 56	9 28	.0903	1.06	7.35	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
14.16	1.02

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.13	6.17	-.3257	-.06	6.80	-.4650	.0891	.2270	-.2249	7.65	8.59	.0877	5.12	6.20
24	-.25	8.39	-.4426	-.12	8.36	-.5772	.1272	.1492	-.2225	7.63	8.18	.0804	3.33	5.77
36	-.35	9.58	-.4994	-.16	9.31	-.6408	.1140	.0852	-.1691	7.59	7.98	.0913	2.25	5.52
48	-.48	10.12	-.5223	-.15	9.92	-.6816	.1160	.0200	-.1220	7.58	7.90	.0942	1.54	5.33
60	-.60	10.63	-.5420	-.22	10.11	-.6904	.0942	.0029	-.0857	7.58	7.80	.1119	1.15	5.30
72	-.69	11.02	-.5598	-.28	10.23	-.6977	.0794	-.0153	-.0563	7.55	7.69	.1237	.82	5.26

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — MARCH
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM)   — 5
ALPHA ANGLE   — 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
18.59	10.23	.1566	1.12	7.88	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.16	6.64	-.3164	-.05	6.90	-.4410	.0877	.2055	-.2078
24	-.30	8.74	-.4199	-.12	8.67	-.5585	.1351	.1278	-.2060
35	-.40	10.08	-.4809	-.17	9.63	-.6265	.1523	.0488	-.1830
48	-.54	10.69	-.5051	-.18	10.35	-.6678	.1585	-.0095	-.1497
60	-.66	11.37	-.5323	-.26	10.65	-.6822	.1591	-.0469	-.1246
72	-.78	11.76	-.5449	-.34	10.73	-.6857	.1663	-.0770	-.1094

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X — 17.95   GIVEN Y — .95

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
9.94	9.53	.1720	5.88	6.81
9.87	9.16	.1705	3.95	6.34
9.82	8.90	.1634	2.65	6.04
9.77	8.80	.1641	1.88	5.82
9.74	8.65	.1688	1.32	5.74
9.74	8.58	.1669	.94	5.72

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 6
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
22.67	11.10	.1958	1.45	8.66	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
21.77	1.30

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.21	6.94	-.3099	-.09	7.09	-.4166	.1094	.1634	-.1898	12.04	10.40	.2145	6.50	7.66
24	-.35	9.19	-.4100	-.15	9.21	-.5416	.1928	.0865	-.2127	12.17	10.00	.2056	4.66	7.09
36	-.49	10.64	-.4645	-.20	10.62	-.6351	.1874	.0217	-.1948	12.19	9.75	.2017	3.28	6.57
48	-.64	11.44	-.4954	-.22	11.25	-.6674	.1950	-.0366	-.1668	12.10	9.61	.2025	2.29	6.39
60	-.80	12.14	-.5208	-.29	11.60	-.6850	.1899	-.0684	-.1406	12.02	9.46	.2119	1.65	6.28
72	-.97	12.54	-.5343	-.36	11.71	-.6897	.2094	-.1064	-.1342	11.98	9.38	.2019	1.22	6.26

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 7
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP.YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
26.54	12.07	.2262	1.75	9.64	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.25	7.30	-.2973	-.10	7.33	-.3831	.1215	.1?-8	-.1779
24	-.40	9.88	-.4040	-.16	10.04	-.5244	.1502	.0862	-.1847
36	-.54	11.44	-.4604	-.20	11.67	-.6195	.1626	.0234	-.1662
48	-.70	12.37	-.4918	-.23	12.43	-.6555	.1870	-.0490	-.1437
60	-.85	13.14	-.5142	-.32	12.83	-.6746	.2221	-.0988	-.1461
72	-1.04	13.59	-.5282	-.42	12.93	-.6803	.2397	-.1278	-.1475

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	25.51	1.53

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
14.24	11.40	.2443	7.15	8.73
14.10	10.94	.2549	5.13	8.05
14.14	10.66	.2610	3.84	7.47
14.13	10.49	.2565	2.40	7.24
14.21	1C 35	.2433	1.84	7.10
14.17	10. !5	.2323	1.46	7.05

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 8
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
30.26	13.06	.2149	1.88	10.45	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
29.07	1.64

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.23	7.80	-.2905	-.09	7.58	-.3642	.1167	.1338	-.1677	16.38	:2.37	.2335	7.98	9.55
24	-.41	10.52	-.3946	-.13	10.38	-.4991	.1546	.0852	-.1779	16.23	11.90	.2414	5.82	8.89
36	-.57	12.19	-.4500	-.17	12.15	-.5923	.1624	.0188	-.1491	16.22	11.62	.2494	3.93	8.33
48	-.75	13.15	-.4797	-.22	13.30	-.6455	.1773	-.0401	-.1270	16.21	11.45	.2522	2.74	7.94
60	-.92	14.06	-.5064	-.31	13.87	-.6698	.2197	-.0992	-.1295	16.23	11.26	.2384	2.01	7.74
72	-1.10	14.63	-.5230	-.42	14.11	-.6812	.2413	-.1252	-.1384	16.23	11.13	.2264	1.73	7.64

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD    - MARCH                 Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 9                     XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE        - 90.0                  YP = V(AT T + DT) - V(AT T)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
34.12	14.26	.1757	1.76	12.13	930		32.93	1.53

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.21	8.70	-.2922	-.09	8.79	-.3649	.0351	.1240	-.1084	18.17	13.57	.2006	7.27	11.17
24	-.39	11.76	-.3978	-.16	12.19	-.5070	.0818	.1056	-.1338	18.18	13.01	.2133	5.98	10.30
36	-.56	13.61	-.4551	-.22	14.17	-.5971	.0848	.0737	-.1210	18.24	12.65	.2266	4.59	9.61
48	-.75	14.86	-.4942	-.26	15.46	-.6478	.1188	.0173	-.1167	18.27	12.37	.2228	3.47	9.17
60	-.96	15.82	-.5210	-.37	16.18	-.6754	.1749	-.0574	-.1195	18.31	12.17	.2015	2.41	8.92
72	-1.17	16.48	-.5386	-.45	16.57	-.6915	.1870	-.0784	-.1172	18.29	12.02	.2009	2.07	8.74

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 10
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
38.06	15.53	.1485	1.75	13.59	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.18	9.62	-.2899	-.08	9.87	-.3683	-.0091	.0953	-.0593
24	-.33	13.02	-.3966	-.16	13.75	-.5086	.0203	.1078	-.0859
36	-.50	15.14	-.4593	-.26	16.22	-.5994	.0556	.0787	-.0939
48	-.74	16.56	-.4973	-.33	17.72	-.6528	.0734	.0413	-.0861
60	-.98	17.52	-.5194	-.48	18.61	-.6864	.1080	-.0027	-.0905
72	-1.26	18.34	-.5419	-.58	18.89	-.5966	.1313	-.0387	-.0858

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
36.77	1.45

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
20.59	14.83	.1736	5.78	12.58
20.44	14.21	.1942	5.52	11.59
20.53	13.76	.2041	4.65	10.77
20.62	13.45	.2093	3.62	10.23
20.75	13.26	.1994	2.89	9.84
20.65	13.05	.1950	2.24	9.73

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (128??)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 11
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
41.75	15.95	.1332	1.47	15.24	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
40.35	1.13

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.18	9.42	-.2756	-.06	10.91	-.3604	-.0239	.0696	-.0280	22.72	15.33	.1566	4.87	14.19
24	-.29	13.03	-.3793	-.14	15.38	-.5039	-.0324	.1105	-.0415	22.72	14.74	.1869	5.32	13.09
36	-.45	15.31	-.4412	-.27	18.29	-.5993	-.0067	.0975	-.0435	22.92	14.30	.2083	4.57	12.12
48	-.66	16.86	-.484!	-.34	20.13	-.6608	.0308	.0526	-.0431	22.97	13.95	.2143	3.43	11.38
60	-.91	17.82	-.5050	-.45	21.06	-.6928	.0756	-.0020	-.0466	23.10	13.77	.2034	2.46	10.96
72	-1.20	18.46	-.5176	-.53	21.35	-.7025	.1170	-.0462	-.0522	23.14	13.65	.1894	1.88	10.83

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 12
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
44.58	15.38	.1701	1.53	14.81	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.11	8.96	-.2715	-.07	9.83	-.3335	.0577	-.0181	-.0024
24	-.17	12.42	-.3711	-.16	14.23	-.4752	.0494	.0083	-.0271
36	-.34	14.59	-.4339	-.22	17.10	-.5688	.0609	.0034	-.0353
48	-.47	15.91	-.4681	-.27	19.14	-.6344	.0802	-.0132	-.0434
60	-.66	16.77	-.4850	-.36	20.26	-.6728	.1094	-.0424	-.0492
72	-.89	17.64	-.5054	-.43	20.68	-.6858	.1463	-.0709	-.0634

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	43.35	1.25

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
24.28	14.80	.1869	.95	13.96
24.58	14.28	.2070	2.49	13.02
24.61	13.86	.2250	2.50	12.17
24.75	13.59	.2347	2.33	11.44
24.98	13.45	.2353	1.96	10.95
25.03	13.27	.2255	1.81	10.77

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 13
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
44.61	13.79	.1882	1.66	13.10	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X: 43.54   GIVEN Y: 1.38

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.06	8.29	-.2810	-.09	8.50	-.3278	-.0097	.0148	.0156	24.27	13.23	.2168	1.72	12.37
24	-.07	10.58	-.3496	-.16	12.24	-.4652	.0467	.0159	-.0233	24.76	12.92	.2299	2.93	11.58
36	-.15	12.33	-.4052	-.25	15.06	-.5678	.0708	.0083	-.0398	24.85	12.60	.2465	3.12	10.76
48	-.25	13.60	-.4390	-.35	16.78	-.6289	.1156	-.0121	-.0667	25.19	12.39	.2481	3.39	10.15
60	-.36	14.40	-.4565	-.50	17.77	-.6851	.1528	-.0449	-.0789	25.48	12.27	.2438	3.05	9.75
72	-.51	14.94	-.4677	-.62	18.10	-.6747	.1866	-.0740	-.0910	25.62	12.19	.2320	2.75	9.64

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 14
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
41.24	12.35	.1337	1.42	10.43	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
40.37	1.17

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	8.25	-.3215	-.11	7.15	-.3431	.0218	.0707	-.0545	21.74	11.68	.1582	4.78	9.78
24	-.07	10.20	-.3939	-.17	10.06	-.4784	.0417	.0826	-.0748	21.97	11.33	.1725	5.00	9.10
36	-.14	11.45	-.4378	-.25	12.00	-.5679	.0896	.0562	-.0950	22.25	11.08	.1722	4.70	8.51
48	-.27	12.72	-.4758	-.32	13.26	-.6249	.1129	.0391	-.1084	22.63	10.84	.1731	4.38	8.06
60	-.38	13.47	-.4963	-.40	13.87	-.6528	.1240	.0150	-.0986	22.82	10.71	.1787	3.71	7.84
72	-.54	13.89	-.5068	-.49	14.31	-.6716	.1321	.0036	-.0977	22.91	10.64	.1808	3.48	7.67

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 15
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
36.18	10.66	.1018	1.39	9.08	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.04	7.66	-.3434	-.10	6.54	-.3564	-.0017	.1040	-.0727
24	-.12	9.31	-.4162	-.17	8.85	-.4883	.0243	.1072	-.0896
36	-.20	10.66	-.4716	-.25	10.44	-.5755	.0502	.1009	-.1076
48	-.31	11.71	-.5120	-.32	11.41	-.6293	.0562	.0715	-.0895
60	-.47	12.45	-.5392	-.41	12.10	-.6653	.0751	.0456	-.0864
72	-.59	12.82	-.5530	-.53	12.58	-.6920	.0696	.0204	-.0828

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X = 35.51
GIVEN Y = 1.32

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
19.01	9.99	.1281	5.05	8.44
19.13	9.66	.1371	4.78	7.85
19.34	9.36	.1419	4.56	7.33
19.49	9.14	.1514	3.54	6.99
19.60	8.97	.1535	3.04	6.73
19.61	8.88	.1505	2.58	6.51

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 16
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
30.54	9.31	.0516	1.15	7.78	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	30.22	1.19

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	6.90	-.3515	-.06	5.38	-.3467	.0260	.0924	-.0979	16.08	8.67	.0610	3.98	7.26
24	-.11	8.58	-.4360	-.13	7.31	-.4720	.0006	.1174	-.0969	16.04	8.33	.0731	3.72	6.80
36	-.20	9.76	-.4950	-.20	8.63	-.5585	.0126	.1095	-.0951	16.08	8.04	.0788	3.27	6.39
48	-.28	10.59	-.5338	-.27	9.66	-.6238	.0333	.0950	-.0990	16.18	7.83	.0789	3.01	6.02
60	-.42	11.05	-.5529	-.37	10.28	-.6620	.0345	.0830	-.0828	16.24	7.73	.0892	2.65	5.78
72	-.52	11.44	-.5720	-.51	10.61	-.6860	.0455	.0674	-.0801	16.22	7.62	.0855	2.27	5.61

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – MARCH
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 17
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
24.31	8.46	.0734	1.22	6.85	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.01	6.54	-.3776	-.06	5.04	-.3736	.0430	.1268	-.1528
24	-.06	8.10	-.4633	-.13	6.50	-.4826	.0377	.1430	-.1704
36	-.17	9.28	-.5256	-.18	7.73	-.5703	.0078	.1436	-.1327
48	-.26	9.89	-.5571	-.22	8.50	-.6250	-.0020	.1359	-.1052
60	-.32	10.33	-.5736	-.28	9.10	-.6687	-.0016	.1238	-.0803
72	-.45	10.50	-.5785	-.38	9.47	-.6992	.0053	.1003	-.0629

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
24.35	1.28

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12.30	7.74	.0827	4.18	6.28
12.37	7.38	.0864	3.83	5.90
12.39	7.11	.1109	3.16	5.53
12.42	6.97	.1307	2.76	5.27
12.60	6.89	.1508	2.44	5.02
12.67	6.88	.1557	2.06	4.84

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 18
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
17.64	7.69	.0998	.82	5.64	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.01	6.91	-.4398	-.07	4.62	-.4062	.0122	.0981	-.1145
24	-.04	8.11	-.5209	-.14	5.53	-.4909	.0313	.1187	-.1538
36	-.13	8.72	-.5581	-.19	6.46	-.5757	.0466	.1006	-.1365
48	-.24	9.08	-.5811	-.26	6.96	-.6202	.0338	.1045	-.1104
60	-.32	9.53	-.5971	-.32	7.42	-.6594	.0590	.0668	-.0940
72	-.42	9.66	-.5950	-.37	7.73	-.6849	.0534	.0525	-.0741

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
17.71	.80

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
8.84	6.86	.1217	1.88	5.12
8.77	6.48	.1290	2.01	4.88
8.81	6.32	.1381	1.80	4.56
8.75	6.22	.1659	1.69	4.37
8.93	6.15	.1690	1.39	4.20
9.04	6.17	.1756	1.18	4.08

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD - MARCH	Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70	
ALTITUDE (KM) - 19	XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE - 90.0	YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
11.16	6.97	.1247	.49	4.60	930	11.05	.45

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.02	6.94	-.4941	-.06	4.03	-.4377	.0597	.0310	-.0864	5.67	6.05	.1477	.65	4.13
24	-.04	7.60	-.5396	-.13	4.97	-.5375	.0668	.0634	-.1284	5.66	5.84	.1551	.86	3.85
36	-.06	8.24	-.5832	-.14	5.74	-.6151	.1026	.0111	-.1222	5.69	5.65	.1453	.66	3.61
48	-.12	8.39	-.5916	-.18	6.00	-.6372	.0955	.0000	-.1019	5.68	5.61	.1546	.55	3.54
60	-.22	8.92	-.6231	-.22	6.12	-.6528	.0883	-.0133	-.0822	5.67	5.45	.1668	.41	3.48
72	-.30	8.91	-.6121	-.27	6.25	-.6674	.0991	-.0417	-.0697	5.73	5.51	.1582	.27	3.43

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — MARCH
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 20
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) − U(AT T)
YP = V(AT T + DT) − V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	6.66	6.55	.1189	.22	3.97	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.01	6.73	-.5132	-.04	3.95	-.4937	-.0090	.0543	-.0404
24	-.10	7.39	-.5646	-.06	4.28	-.5335	.0391	.0328	-.0707
36	-.16	7.89	-.6010	-.05	4.99	-.6265	.0088	.0525	-.0528
48	-.22	8.00	-.6051	-.06	5.03	-.6294	.0503	.0264	-.0764
60	-.30	8.44	-.6421	-.06	5.30	-.6618	.0416	.0370	-.0720
72	-.40	8.37	-.6377	-.09	5.21	-.6491	.0638	.0203	-.0790

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	6.30	.23

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.48	5.61	.1673	.28	3.45
3.45	5.39	.1602	.26	3.35
3.42	5.22	.1946	.27	3.09
3.42	5.20	.1718	.27	3.08
3.37	5.01	.1969	.28	2.97
3.32	5.04	.1831	.26	3.01

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – MARCH
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 21
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.71	6.21	.0719	-.10	3.61	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.03	6.30	-.5060	-.01	4.12	-.5737	-.0235	.0656	-.0365
24	-.09	6.81	-.5519	.00	4.02	-.5632	.0446	.0369	-.0882
36	-.12	7.30	-.5943	.03	4.61	-.6447	.0232	.0448	-.0768
48	-.14	7.42	-.6058	.02	4.47	-.6233	.0620	-.0014	-.0776
60	-.21	7.63	-.6275	.01	5.00	-.6911	.0190	.0545	-.0730
72	-.20	7.45	-.6218	.01	4.84	-.6681	.0723	.0009	-.0858

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
3.10	-.11

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
2.15	5.35	.1100	.04	2.95
2.12	5.16	.0821	.06	2.98
2.10	4.98	.0946	.06	2.75
2.08	4.93	.0741	.02	2.82
2.03	4.82	.1141	.07	2.60
2.01	4.86	.0775	.04	2.68

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - MARCH   Y = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 22   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                               FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
2.07	6.31	.0503	-.14	3.67	930		1.41	-.07

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.09	5.60	-.4466	-.01	4.38	-.6022	.0460	.0462	-.0817	1.33	5.63	.0478	-.03	2.92
24	-.15	6.23	-.4987	.01	3.85	-.5351	.0783	.0268	-.1066	1.30	5.45	.0373	-.03	3.09
36	-.21	6.84	-.5437	.00	4.87	-.6734	.0077	.0635	-.0668	1.27	5.28	.0692	-.04	2.70
48	-.28	6.99	-.5558	-.01	4.48	-.6241	.0201	.0150	-.0412	1.23	5.24	.0615	-.08	2.87
60	-.33	7.30	-.5844	-.01	5.13	-.7135	-.0079	.0343	-.0222	1.19	5.12	.0903	-.08	2.57
72	-.36	7.40	-.5977	-.01	4.57	-.6404	.0335	-.0013	-.0351	1.17	5.06	.0647	-.09	2.82

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MARCH
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 23
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.83	6.43	.0543	-.28	3.59	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.03	-.20

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.03	5.41	-.4297	.01	4.05	-.5752	.0215	.0346	-.0623	.85	5.80	.0525	-.17	2.94
24	-.04	6.07	-.4751	.02	3.79	-.5384	.0393	.0311	-.0971	.85	5.64	.0362	-.17	3.02
36	-.12	6.64	-.5199	.02	4.63	-.6524	.0531	.0126	-.0950	.80	5.48	.0260	-.17	2.72
48	-.15	6.84	-.5374	.04	4.40	-.6213	.0203	.0041	-.0580	.78	5.42	.0413	-.16	2.82
60	-.20	7.09	-.5598	.01	4.98	-.7048	.0093	-.0242	-.0244	.75	5.33	.0464	-.17	2.55
72	-.24	7.31	-.5792	-.01	4.60	-.6560	-.0036	-.0113	-.0238	.73	5.24	.0501	-.18	2.71

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     - 24
ALPHA ANGLE       - 90.0
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X  = U(AT T)
Y  = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.53	6.81	.0817	-.43	3.71	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.31	-.32

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	5.66	-.4246	.01	4.12	-.5557	.1259	-.0653	-.0635	.67	6.16	.0643	-.26	3.08
24	-.11	6.11	-.4544	.02	4.18	-.5695	.0697	.0089	-.0803	.68	6.06	.0793	-.26	3.04
36	-.18	6.64	-.4933	-.02	+.68	-.6345	.1407	-.0677	-.0925	.61	5.92	.0499	-.28	2.87
48	-.28	6.69	-.4967	-.04	4.66	-.6360	.0859	-.0245	-.0691	.55	5.91	.0788	-.28	2.86
60	-.38	7.33	-.5433	-.05	5.03	-.6861	.1099	-.0694	-.0702	.50	5.72	.0602	-.29	2.70
72	-.48	7.28	-.5486	-.08	4.91	-.6689	.0518	-.0067	-.0583	.45	5.69	.0935	-.30	2.76

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 25
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.82	7.57	.1226	-.56	3.42	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.04	6.19	-.4154	-.04	3.54	-.5213	.0574	-.0485	-.0107
24	-.11	6.38	-.4248	-.02	3.63	-.5394	.0283	-.0168	-.0150
36	-.17	6.98	-.4608	-.04	4.17	-.6158	.0660	-.0403	-.0271
48	-.26	7.12	-.4754	-.04	4.24	-.6231	.0551	-.0230	-.0291
60	-.34	7.54	-.5059	-.05	4.53	-.6696	.0931	-.0568	-.0407
72	-.43	7.76	-.5224	-.07	4.52	-.6739	.0527	-.0454	-.0099

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.13	-.45

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.72	6.89	.1409	-.35	2.92
.70	6.85	.1494	-.34	2.88
.66	6.72	.1518	-.35	2.70
.62	6.66	.1597	-.35	2.68
.58	6.53	.1533	-.35	2.54
.52	6.46	.1759	-.36	2.53

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD – MARCH	Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70	
ALTITUDE (KM) – 26	XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE – 90.0	YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
1.62	8.32	.1246	-.61	3.35	930		1.01	-.54

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	5.49	-.3361	-.00	3.30	-.4940	.0604	-.0443	-.0087	1.07	7.84	.1410	-.35	2.91
24	-.10	6.17	-.3700	-.01	3.67	-.5459	.0755	-.0353	-.0239	1.06	7.73	.1461	-.34	2.81
36	-.17	6.92	-.4113	-.01	4.13	-.6126	.1186	-.0657	-.0400	1.03	7.59	.1429	-.34	2.65
48	-.24	7.01	-.4252	.00	4.26	-.6323	.1132	-.0604	-.0430	.99	7.53	.1457	-.33	2.60
60	-.28	7.49	-.4598	-.02	4.51	-.6660	.1409	-.0845	-.0532	.95	7.39	.1411	-.34	2.50
72	-.32	7.94	-.4882	-.03	4.60	-.6778	.1026	-.0754	-.0297	.92	7.26	.1584	-.36	2.46

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12668) - CAPE KENNEDY
MONTH OF RECORD - MARCH
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 27
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	2.04	9.42	.1066	-.62	3.65	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	1.41	-.56

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	5.60	-.3043	.01	3.82	-.5239	-.0343	-.0253	.0355	1.27	8.97	.1393	-.38	3.10
24	-.08	6.35	-.3421	.02	3.89	-.5274	.0555	-.0738	.0191	1.23	8.84	.1272	-.38	3.09
36	-.12	7.27	-.3916	.00	4.51	-.6121	.0264	-.0646	.0313	1.22	8.66	.1471	-.38	2.88
48	-.21	7.62	-.4169	.01	4.53	-.6139	.1033	-.1000	-.0071	1.16	8.55	.1213	-.37	2.87
60	-.29	8.12	-.4471	-.01	4.97	-.6726	.1047	-.0928	-.0185	1.13	8.42	.1272	-.37	2.70
72	-.37	8.73	-.4805	-.01	4.99	-.6765	.1366	-.1150	-.0347	1.08	8.26	.1119	-.37	2.68

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) — CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3	1/56 − 12/70	0	90.0	.07	3.20	−.2107	.00	3.57	930
3	1/56 − 12/70	1	90.0	3.18	7.05	.0096	1.64	6.24	930
3	1/56 − 12/70	2	90.0	7.28	7.30	.0412	1.31	6.13	930
3	1/56 − 12/70	3	90.0	10.87	8.27	.0818	1.28	6.64	930
3	1/56 − 12/70	4	90.0	14.56	9.28	.0903	1.08	7.35	930
3	1/56 − 12/70	5	90.0	18.59	10.23	.1566	1.12	7.88	930
3	1/56 − 12/70	6	90.0	22.67	11.10	.1958	1.45	8.66	930
3	1/56 − 12/70	7	90.0	26.54	12.07	.2262	1.75	9.64	930
3	1/56 − 12/70	8	90.0	30.26	13.06	.2149	1.88	10.45	930
3	1/56 − 12/70	9	90.0	34.12	14.26	.1757	1.76	12.13	930
3	1/56 − 12/70	10	90.0	38.06	15.53	.1485	1.75	13.59	930
3	1/56 − 12/70	11	90.0	41.75	15.95	.1332	1.47	15.24	930
3	1/56 − 12/70	12	90.0	44.58	15.38	.1701	1.53	14.81	930
3	1/56 − 12/70	13	90.0	44.61	13.79	.1882	1.66	13.10	930
3	1/56 − 12/70	14	90.0	41.24	12.35	.1337	1.42	10.43	930
3	1/56 − 12/70	15	90.0	36.18	10.66	.1018	1.39	9.08	930
3	1/56 − 12/70	16	90.0	30.54	9.31	.0516	1.15	7.78	930
3	1/56 − 12/70	17	90.0	24.31	8.46	.0734	1.22	6.85	930
3	1/56 − 12/70	18	90.0	17.64	7.69	.0998	.82	5.64	930
3	1/56 − 12/70	19	90.0	11.16	6.57	.1247	.49	4.60	930
3	1/56 − 12/70	20	90.0	6.66	6.55	.1189	.22	3.97	930
3	1/56 − 12/70	21	90.0	3.71	6.21	.0719	−.10	3.61	930
3	1/56 − 12/70	22	90.0	2.07	6.31	.0503	−.14	3.67	930
3	1/56 − 12/70	23	90.0	.83	6.43	.0543	−.28	3.59	930
3	1/56 − 12/70	24	90.0	.53	6.81	.0817	−.43	3.71	930
3	1/56 − 12/70	25	90.0	.82	7.57	.1226	−.56	3.42	930
3	1/56 − 12/70	26	90.0	1.62	8.32	.1246	−.61	3.35	930
3	1/56 − 12/70	27	90.0	2.04	9.42	.1066	−.62	3.65	930

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 0
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.08	3.18	-.1579	.47	3.14	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-1.07	.46

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.02	3.51	-.5560	.02	3.25	-.5241	-.2237	.3274	-.1052	-.61	2.53	-.1292	.06	2.58
24	-.03	3.47	-.5596	.02	3.79	-.6153	-.1102	.3098	-.1625	-.61	2.53	-.1947	.03	2.35
36	-.06	4.33	-.6968	.04	4.38	-.7067	-.1771	.2602	-.0174	-.59	2.23	-.1490	.16	2.18
48	-.05	3.92	-.6359	.05	4.50	-.7286	-.1165	.1708	-.0049	-.57	2.44	-.2032	.19	2.13
60	-.08	4.37	-.7082	.05	4.62	-.7471	-.1699	.1724	.0702	-.58	2.24	-.1560	.23	2.08
72	-.07	3.95	-.6418	.05	4.52	-.7338	-.1209	.1291	.0398	-.57	2.43	-.1975	.23	2.13

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 1
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.98	6.56	-.0311	1.20	5.26	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.02	4.99	-.3899	-.01	4.69	-.4507	.0565	.3550	-.3526
24	-.05	6.83	-.5375	-.01	6.08	-.5872	.0561	.3073	-.3435
36	-.07	8.07	-.6369	-.01	7.15	-.6892	.0429	.1817	-.2267
48	-.10	8.34	-.6632	-.00	7.45	-.7225	.0106	.1055	-.1159
60	-.13	8.40	-.6703	-.01	7.50	-.7271	-.0022	.0729	-.0633
72	-.09	8.27	-.6591	-.00	7.48	-.7298	-.0004	.0467	-.0406

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.89	1.20

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-.04	5.64	-.0704	.93	4.24
.08	5.14	-.0974	.81	3.96
.25	4.89	-.1057	.71	3.64
.33	4.86	-.0791	.65	3.59
.36	4.85	-.0581	.63	3.59
.40	4.93	-.0589	.61	3.59

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD —APRIL
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 2
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.65	7.14	.0651	.16	5.17	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.03	5.03	-.3684	-.04	4.46	-.4313	.0865	.2955	-.3109
24	-.08	6.60	-.4824	-.06	5.81	-.5675	.1206	.2398	-.3195
36	-.09	7.83	-.5747	-.07	6.78	-.6645	.1054	.1415	-.2476
48	-.15	8.27	-.6101	-.08	7.15	-.7022	.0995	.0645	-.1838
60	-.17	8.54	-.6340	-.06	7.27	-.7152	.0724	.0262	-.1166
72	-.17	8.58	-.6364	-.06	7.32	-.7220	.0902	-.0153	-.1034

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
3.46	.19

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.84	6.33	.0613	1.24	4.34
1.84	5.96	.0354	.83	3.95
1.80	5.69	.0314	.52	3.71
1.75	5.59	.0300	.32	3.62
1.72	5.50	.0575	.20	3.59
1.73	5.50	.0413	.14	3.57

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 3
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
6.04	8.04	.0509	-.82	5.97	900	5.91	-.70

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	4.94	-.3170	-.07	4.85	-.4063	.1094	.2878	-.2821	3.49	7.36	.0417	1.95	5.07
24	-.13	6.86	-.4419	-.11	6.44	-.5430	.1053	.2435	-.2845	3.27	6.95	.0319	1.09	4.67
36	-.18	8.13	-.5273	-.15	7.41	-.6271	.083E	.1607	-.2200	3.06	6.68	.0356	.43	4.47
48	-.26	8.78	-.5738	-.16	7.78	-.6603	.0853	.0857	-.1729	2.93	6.51	.0280	.06	4.40
60	-.32	9.07	-.5975	-.12	8.04	-.6860	.0833	.0454	-.1343	2.83	6.41	.0335	-.10	4.30
72	-.34	9.20	-.6055	-.11	8.16	-.7007	.0916	.0115	-.1181	2.80	6.38	.0239	-.20	4.23

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 4
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8.60	8.74	.0932	-1.40	6.56	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.07	5.03	-.2950	-.07	5.27	-.4033	.1801	.2426	-.2781
24	-.16	6.97	-.4104	-.08	6.94	-.5297	.1586	.1798	-.2657
36	-.25	8.31	-.4913	-.09	7.79	-.6018	.1621	.0989	-.2417
48	-.35	8.96	-.5327	-.13	8.41	-.6517	.1524	.0368	-.1995
60	-.41	9.38	-.5615	-.06	8.71	-.6797	.1507	-.0155	-.1640
72	-.45	9.60	-.5756	-.02	8.82	-.6878	.1477	-.0348	-.1495

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X: 8.44
GIVEN Y: -1.12

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
5.26	8.11	.0765	2.81	5.62
4.79	7.77	.0728	1.35	5.28
4.55	7.47	.0589	.53	5.07
4.31	7.32	.0531	.01	4.89
4.15	7.20	.0492	-.30	4.78
4.09	7.12	.0479	-.42	4.74

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 5
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
11.13	9.69	.1393	-1.70	6.83	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.10	5.52	-.2897	-.05	5.50	-.4065	.1648	.2004	-.2383
24	-.25	7.30	-.3874	-.08	7.01	-.5205	.2114	.1239	-.2570
36	-.39	8.63	-.4594	-.12	8.07	-.5939	.2391	.0476	-.2564
48	-.50	9.37	-.5013	-.15	8.64	-.6411	.2304	-.0169	-.2239
60	-.57	9.89	-.5297	-.07	8.95	-.6672	.2419	-.0763	-.2048
72	-.58	10.16	-.5475	-.02	9.08	-.6760	.2209	-.0914	-.1802

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
11.03	-1.33

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
6.54	9.09	.1361	2.80	5.96
6.23	8.77	.1176	1.58	5.60
5.95	8.48	.0979	.77	5.33
5.62	8.32	.0894	.09	5.16
5.4.	8.19	.0739	-.32	5.05
5.31	8.09	.0790	-.55	5.02

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY.
MONTH OF RECORD   – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 6
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
13.90	10.63	.1611	-1.93	7.29	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.09	5.78	-.2736	-.05	5.69	-.3888	.1323	.1740	-.1911
24	-.28	7.71	-.3709	-.08	7.27	-.4975	.2378	.0970	-.2451
36	-.41	9.02	-.4361	-.12	8.5゛	-.5.̣2	.2787	.0126	-.2509
48	-.55	9.70	-.4747	-.17	9.12	-.6314	.2763	-.0557	-.2228
60	-.64	10.45	-.5102	-.12	9.38	-.6479	.2695	-.0987	-.2076
72	-.68	10.93	-.5359	-.10	9.33	-.6457	.2635	-.1215	-.1970

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	13.75	-1.66

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
7.94	10.09	.1697	2.94	6.51
7.87	9.72	.1441	1.97	6.12
7.54	9.46	.1197	1.08	5.77
7.06	9.30	.1098	.24	5.58
6.86	9.11	.0983	-.31	5.53
6.71	8.95	.0922	-.62	5.56

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 7
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
16.79	11.65	.1917	-2.27	8.02	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.?8	5.83	-.2498	-.03	6.33	-.3932	.1460	.1286	-.1465
24	-.31	8.08	-.3504	-.09	7.94	-.5006	.2479	.0517	-.2114
36	-.51	9.56	-.4171	-.13	9.18	-.5799	.3034	-.0399	-.2338
48	-.66	10.50	-.4648	-.19	9.73	-.6239	.3178	-.1084	-.2260
60	-.75	11.21	-.5022	-.16	9.91	-.6358	.3121	-.1471	-.2124
72	-.79	11.80	-.5306	-.14	9.90	-.6369	.3032	-.1621	-.2046

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
16.60	-2.07

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
9.43	11.20	.2050	3.18	7.21
9.44	10.81	.1804	1.96	6.78
9.13	10.51	.1492	.94	6.43
8.62	10.27	.1315	.06	6.22
8.23	10.05	.1225	-.56	6.17
8.04	9.86	.1186	-.86	6.17

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 8
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
19.71	12.80	.1907	-2.69	8.76	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
19.58	-2.52

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YF	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.11	6.84	-.2681	-.02	6.71	-.3825	.1114	.1290	-.1482	10.88	12.24	.2048	3.01	7.95
24	-.35	9.24	-.3641	-.08	8.48	-.4879	.1864	.0705	-.1889	10.75	11.82	.1940	1.78	7.51
36	-.56	10.85	-.4309	-.10	9.83	-.5663	.2439	-.0077	-.2095	10.46	11.47	.1712	.86	7.13
48	-.75	11.84	-.4754	-.13	10.56	-.6145	.2641	-.0761	-.2042	9.99	11.21	.1519	-.03	6.87
60	-.85	12.63	-.5121	-.10	10.80	-.6299	.2810	-.1343	-.1930	9.57	10.97	.1359	-.77	6.79
72	-.91	13.26	-.5414	-.05	10.93	-.6381	.2958	-.1679	-.1929	9.31	10.75	.1217	-1.10	6.74

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – APRIL
PERIOD OF RECORD   – 1/56 – 12/73
ALTITUDE (KM)   – 9
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
22.54	14.47	.7126	-3.06	10.00	900		22.32	-2.83

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.14	7.61	-.2669	-.02	7.60	-.3798	.1096	.1133	-.1361	12.23	13.85	.2295	3.04	9.11
24	-.40	10.48	-.3694	-.07	9.96	-.5016	.1721	.0673	-.1744	12.02	13.34	.2280	1.84	8.51
36	-.63	12.23	-.4334	-.10	11.41	-.5751	.2322	-.0019	-.2005	11.81	12.95	.2092	1.00	8.07
48	-.85	13.50	-.4820	-.14	12.19	-.6186	.2613	-.0792	-.1973	11.31	12.63	.1886	-.13	7.81
60	-.97	14.31	-.5146	-.09	12.34	-.6256	.2825	-.1398	-.1861	10.86	12.39	.1720	-.99	7.79
72	-1.06	14.97	-.5419	-.05	12.57	-.6375	.3022	-.1886	-.1798	10.47	12.15	.1548	-1.58	7.70

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 10
ALPHA ANGLE – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
25.57	15.70	.2638	-3.69	11.49	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.15	8.09	-.2677	-.07	8.46	-.3681	.1577	.0611	-.1260
24	-.44	11.11	-.3654	-.11	11.03	-.4848	.2354	.0050	-.1767
36	-.70	13.12	-.4293	-.14	12.72	-.5619	.2895	-.0712	-.1962
48	-.88	14.41	-.4747	-.23	13.61	-.6076	.3289	-.1476	-.2003
60	-1.04	15.28	-.5078	-.23	14.13	-.6297	.3599	-.2138	-.1985
72	-1.15	16.09	-.5386	-.20	14.32	-.6392	.3700	-.2528	-.1948

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
25.32	-3.37

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
13.53	15.07	.2799	2.47	10.60
13.54	14.54	.2729	1.42	9.95
13.21	14.13	.2579	.31	9.44
12.66	13.80	.2385	-.80	9.11
12.05	13.52	.2170	-1.77	8.93
11.58	13.23	.2014	-2.43	8.84

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — APRIL
PERIOD OF RECORD   — 1/56 — 12/70
ALTITUDE (KM)   — 11
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) − U(AT T)
YP = V(AT T + DT) − V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X, Y, XP, YP · CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
28.80	16.91	.2498	−4.35	12.98	900		28.59	−4.06

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	−.14	8.62	−.2605	−.08	9.51	−.3046	.1150	.0356	−.0820		14.84	16.30	.2679	1.07	12.04
24	−.45	11.61	−.3557	−.12	12.49	−.4856	.1888	−.0249	−.1145		14.41	15.78	.2672	−.06	11.31
36	−.70	13.59	−.4194	−.15	14.20	−.5566	.2392	−.0945	−.1319		13.98	15.34	.2552	−1.20	10.77
48	−.92	15.09	−.4666	−.19	15.15	−.5982	.2794	−.1643	−.1401		13.51	14.95	.2361	−2.29	10.40
60	−1.04	16.27	−.5090	−.20	15.99	−.6262	.3131	−.2227	−.1495		12.98	14.55	.2126	−3.11	10.11
72	−1.17	17.01	−.5379	−.16	16.32	−.6393	.3303	−.2707	−.1452		12.39	14.24	.1925	−3.95	9.94

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD – APRIL   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 12   XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE – 90.0   YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
31.91	17.34	.2684	-4.73	13.94	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.19	8.31	-.2471	-.10	9.81	-.3463	.1555	-.0142	-.0669
24	-.53	11.29	-.3408	-.20	12.88	-.4617	.2224	-.0712	-.1027
36	-.78	13.55	-.4069	-.29	14.82	-.5351	.2731	-.1374	-.1246
48	-1.06	15.04	-.4544	-.32	16.05	-.5849	.2958	-.2000	-.1279
60	-1.24	16.27	-.4983	-.35	16.87	-.6123	.3205	-.2465	-.1398
72	-1.38	17.10	-.5289	-.33	17.34	-.6306	.3359	-.2856	-.1452

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	31.73	-4.66

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
15.99	16.79	.2807	-.27	13.07
15.51	16.29	.2779	-1.15	12.36
15.22	15.83	.2660	-2.20	11.78
14.62	15.44	.2510	-3.46	11.30
14.06	15.03	.2302	-4.20	11.00
13.58	14.70	.2091	-4.88	10.77

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 13
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	33.91	16.46	.3013	-4.76	13.14	900		33.71	-4.75

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.23	7.52	-.2373	-.13	8.55	-.3136	.1755	-.0371	-.0618	•	16.73	15.99	.3103	-1.41	12.48
24	-.58	10.45	-.3298	-.26	11.69	-.4387	.2383	-.0835	-.1011	•	16.56	15.54	.3111	-1.56	11.81
36	-.89	12.67	-.4009	-.31	13.83	-.5248	.2922	-.1478	-.1290	•	16.13	15.08	.3024	-2.32	11.19
48	-1.13	13.86	-.4436	-.38	15.00	-.5733	.3307	-.2216	-.1360	•	15.33	14.75	.2849	-3.80	10.76
60	-1.34	14.92	-.4825	-.37	15.92	-.6077	.3375	-.2654	-.1346	•	14.69	14.41	.2739	-4.75	10.40
72	-1.48	15.80	-.5127	-.35	16.22	-.6220	.3449	-.2884	-.1416	•	14.43	14.12	.2609	-5.10	10.24

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 14
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
32.07	14.38	.3158	-4.34	11.44	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.22	7.29	-.2603	-.09	7.26	-.3737	.1507	-.0005	-.0805
24	-.51	9.52	-.3373	-.21	9.81	-.4176	.2407	-.0498	-.1238
36	-.77	11.20	-.4028	-.29	11.76	-.5070	.3034	-.1244	-.1455
48	-.89	12.46	-.4482	-.39	12.95	-.5637	.3505	-.1821	-.1730
60	-1.02	13.46	-.4889	-.39	13.80	-.6006	.3505	-.2232	-.1692
72	-1.12	14.18	-.5224	-.40	14.26	-.6238	.3715	-.2703	-.1755

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
31.89	-4.30

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
16.34	13.87	.3299	.05	10.88
16.38	13.53	.3290	-.20	10.37
15.63	13.16	.3219	-1.25	9.85
15.43	12.85	.3050	-1.84	9.44
14.84	12.55	.2987	-2.82	9.14
14.23	12.26	.2794	-3.63	8.92

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)   - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD   - APRIL                 Y  = V(AT T)
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     - 15                    XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE       - 90.0                  YP = V(AT T + DT) - V(AT T)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
28.08	12.04	.2965	-3.47	9.14	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
28.03	-3.39

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.20	6.40	-.2851	-.08	5.68	-.3055	.0092	.0539	-.0632	13.40	11.52	.3226	.44	8.69
24	-.43	7.88	-.3501	-.20	7.58	-.4095	.1493	.0152	-.1221	13.69	11.25	.3208	.72	8.31
36	-.67	9.31	-.4170	-.30	9.02	-.4903	.2314	-.0516	-.1525	13.36	10.92	.3128	-.05	7.95
48	-.83	10.23	-.4589	-.39	9.98	-.5443	.2899	-.1128	-.1736	13.08	10.69	.2987	-.67	7.66
60	-.91	11.26	-.5070	-.43	10.67	-.5809	.3121	-.1619	-.1782	12.67	10.38	.2890	-1.47	7.44
72	-1.02	11.96	-.5402	-.43	11.18	-.6105	.3337	-.2092	-.1807	12.29	10.13	.2748	-2.14	7.24

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   .- 16
ALPHA ANGLE   . - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
23.03	10.26	.2568	-3.06	7.96	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.16	5.83	-.3078	-.09	5.13	-.3134	.0278	.0939	-.0918
24	-.35	6.92	-.3687	-.15	6.73	-.4163	.1243	.0642	-.1227
36	-.55	8.15	-.4348	-.21	8.04	-.4987	.1716	.0226	-.1386
48	-.71	8.99	-.4773	-.27	8.94	-.5569	.2053	-.0495	-.1274
60	-.79	9.79	-.5190	-.29	9.59	-.5968	.2148	-.0897	-.1240
72	-.88	10.28	-.5508	-.28	10.00	-.6190	.2411	-.1277	-.1328

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X			GIVEN Y	
	22.98			-2.97	
MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP	
11.07	9.72	.2898	1.60	7.52	
10.95	9.50	.2961	1.54	7.18	
10.72	9.21	.3023	.91	6.85	
10.39	9.01	.2976	-.27	6.59	
10.21	8.77	.2958	-.94	6.38	
9.92	8.56	.2845	-1.30	6.25	

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 17
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
17.30	9.19	.2746	-2.45	6.71	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.21	5.89	-.3365	-.06	4.87	-.3571	-.0542	.1606	-.1018
24	-.39	7.20	-.4154	-.09	6.28	-.4637	-.0363	.1570	-.0893
36	-.54	8.08	-.4699	-.14	7.28	-.5431	.0373	.0966	-.0951
48	-.69	8.63	-.5016	-.19	7.79	-.5874	.0954	.0381	-.1059
60	-.79	9.14	-.5369	-.21	8.26	-.6184	.1493	-.0135	-.1302
72	-.88	9.56	-.5640	-.22	8.59	-.6420	.1667	-.0581	-.1232

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	17.33	-2.36

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
8.43	8.59	.3325	1.48	6.20
8.16	8.31	.3694	.98	5.87
8.02	8.08	.3796	.40	5.58
7.93	7.94	.3735	-.01	5.39
7.78	7.74	.3582	-.28	5.25
7.58	7.59	.3530	-.73	5.14

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 18
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	10.91	7.85	.2764	-2.03	5.23	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.16	5.35	-.3566	-.01	4.00	-.3761	-.0067	.1458	-.1141
24	-.30	6.27	-.4215	-.04	5.01	-.4768	.0045	.1700	-.1213
36	-.42	6.91	-.4653	-.08	5.81	-.5632	.0454	.1462	-.1302
48	-.56	7.46	-.5049	-.08	6.34	-.6162	.0838	.0786	-.1180
60	-.69	7.80	-.5373	-.11	6.62	-.6468	.1067	.0350	-.1188
72	-.77	7.89	-.5538	-.12	6.78	-.6643	.1642	-.0290	-.1353

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	11.01	-1.95

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
5.50	7.28	.3355	.49	4.79
5.31	7.06	.3756	.55	4.51
5.21	6.89	.3975	.42	4.23
5.02	6.75	.4023	.00	4.06
4.81	6.60	.4009	-.25	3.95
4.61	6.53	.3727	-.43	3.89

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - APRIL   Y = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 19   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP / CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
5.31	7.02	.2816	-1.38	4.22	900	5.39	-1.26

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.12	5.66	-.4160	-.01	3.90	-.4619	.0982	.0449	-.1130	2.68	6.37	.3331	-.38	3.72
24	-.22	6.05	-.4520	-.01	4.36	-.5201	.1293	.0451	-.1333	2.58	6.24	.3482	-.29	3.57
36	-.34	6.45	-.4905	-.05	4.97	-.6070	.0706	.0689	-.1046	2.40	6.10	.3986	-.33	7.32
48	-.44	6.72	-.5176	-.06	5.15	-.6333	.0685	.0677	-.1006	2.29	5.99	.4208	-.35	3.23
60	-.49	7.13	-.5537	-.07	5.55	-.6821	.0782	.0398	-.0989	2.21	5.84	.4403	-.44	3.06
72	-.51	7.19	-.5673	-.08	5.58	-.6845	.1226	-.0121	-.1095	2.12	5.78	.4141	-.52	3.06

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 20
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.67	6.07	.2286	-1.05	3.87	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	1.80	-.86

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.08	4.78	-.4027	-.01	4.07	-.5279	.0021	.0945	-.0714	.80	5.54	.2978	-.47	3.27
24	-.16	5.23	-.4420	-.04	4.21	-.5506	-.0020	.1012	-.0767	.76	5.43	.3114	-.48	3.21
36	-.21	5.77	-.4919	-.05	4.84	-.6365	.0415	.0397	-.0713	.69	5.28	.3227	-.55	2.98
48	-.26	5.89	-.5074	-.06	4.87	-.6419	.0716	.0239	-.0922	.66	5.22	.3115	-.54	2.96
60	-.30	6.14	-.5320	-.06	5.09	-.6732	.0721	.0198	-.1013	.64	5.13	.3160	-.55	2.85
72	-.34	6.28	-.5537	-.07	5.06	-.6721	.1176	-.0128	-.1281	.60	5.04	.2918	-.55	2.86

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — APRIL
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 21
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) — U(AT T)
YP = V(AT T + DT) — V(AT T)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	-.59	5.24	.1737	-1.06	3.25	900	-.58	-.99

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	4.47	-.4266	-.02	3.95	-.6127	.0761	-.0295	-.0472	-.30	4.74	.2128	-.58	2.57
24	-.11	4.67	-.4479	-.02	3.62	-.5624	.1049	-.0612	-.0457	-.36	4.68	.1988	-.57	2.69
36	-.16	5.01	-.4861	-.04	4.35	-.6760	.0924	-.0648	-.0416	-.38	4.58	.2243	-.58	2.40
48	-.20	5.41	-.5310	-.04	4.12	-.6411	.0981	-.0305	-.0837	-.36	4.44	.2113	-.59	2.49
60	-.22	5.85	-.5725	-.04	4.54	-.7122	.0823	-.0513	-.0610	-.39	4.29	.2336	-.58	2.28
72	-.24	5.95	-.5915	-.02	4.49	-.7065	.1185	-.0632	-.1040	-.38	4.22	.1970	-.57	2.30

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 22
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-2.01	4.89	.0979	-.80	3.03	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-2.08	-.75

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.00	3.99	-.4091	-.00	3.69	-.6056	-.0211	-.0337	.0426	-1.00	4.46	.1445	-.35	2.41
24	-.04	4.23	-.4359	.03	3.35	-.5533	.0279	-.0059	-.0161	-.98	4.40	.1242	-.42	2.53
36	-.06	4.68	-.4872	.02	3.99	-.6632	.0288	-.0182	-.0140	-.98	4.27	.1362	-.41	2.27
48	-.09	5.03	-.5270	.04	3.81	-.6388	-.0082	.0140	-.0018	-.99	4.15	.1549	-.41	2.33
60	-.13	5.35	-.5594	.04	4.34	-.7207	.0593	-.0447	-.0337	-1.02	4.05	.1262	-.40	2.10
72	-.17	5.61	-.5915	.05	4.18	-.6951	.0421	-.0405	-.0181	-1.03	3.94	.1357	-.38	2.18

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 23
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP										CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N					GIVEN X	GIVEN Y			
	-2.73	4.92	.0222	-.72	2.94	900					-2.81	-.75			
DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R- (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	4.23	-.4334	-.01	3.47	-.5941	-.0655	-.0279	.0800	-1.40	4.43	.0568	-.22	2.36
24	-.11	4.29	-.4603	.01	3.25	-.5670	-.0785	.0190	.0701	-1.35	4.36	.0688	-.29	2.42
36	-.12	4.80	-.5159	.03	3.84	-.6681	-.0278	-.0505	.0813	-1.38	4.20	.0648	-.21	2.18
48	-.13	5.06	-.5437	.06	3.82	-.6703	-.0433	-.0025	.0639	-1.36	4.12	.0772	-.26	2.18
60	-.14	5.53	-.5914	.07	4.16	-.7272	.0244	-.0262	.0142	-1.35	3.96	.0498	-.29	2.02
72	-.16	5.69	-.6128	.10	4.23	-.7428	.0199	-.0093	.0040	-1.34	3.89	.0539	-.29	1.97

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 24
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-2.87	5.27	.0941	-.75	2.97	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.06	4.06	-.3836	-.00	3.42	-.5860	-.0280	-.0475	.0564
24	-.10	4.41	-.4284	.01	3.36	-.5770	.0089	-.0241	.0115
36	-.12	4.94	-.4803	.05	3.90	-.6723	-.0062	-.0500	.0436
48	-.14	5.23	-.5150	.09	3.93	-.6836	.0173	-.0653	.0251
60	-.14	5.81	-.5766	.10	4.16	-.7210	.0544	-.1113	.0207
72	-.16	6.11	-.6055	.15	4.24	-.7306	.0889	-.0784	-.0488

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-2.87	-.78

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-1.53	4.86	.1378	-.22	2.40
-1.47	4.76	.1255	-.31	2.43
-1.51	4.61	.1505	-.23	2.20
-1.49	4.51	.1342	-.21	2.17
-1.49	4.29	.1196	-.20	2.05
-1.46	4.19	.0947	-.25	2.03

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 25
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N					GIVEN X	GIVEN Y
	-2.61	5.85	.1895	-.78	3.00	900					-2.57	-.85

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	4.41	-.3757	.02	3.80	-.5670	.0329	-.0672	.0183	-1.39	5.42	.2394	-.27	2.46
24	-.05	4.67	-.4059	.04	3.52	-.5888	.1357	-.1427	-.0171	-1.37	5.34	.2098	-.24	2.41
36	-.09	5.35	-.4714	.06	4.00	-.6705	.1258	-.1552	-.0200	-1.37	5.16	.2188	-.23	2.21
48	-.11	5.60	-.5009	.08	4.03	-.6784	.1690	-.2026	-.0331	-1.37	5.06	.1940	-.20	2.18
60	-.13	6.34	-.5675	.08	4.29	-.7224	.1669	-.2077	-.0475	-1.39	4.81	.1864	-.22	2.05
72	-.12	6.59	-.5924	.14	4.36	-.7312	.2017	-.1944	-.1019	-1.34	4.71	.1587	-.24	2.04

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS CF X. Y. XP. YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – APRIL
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 26
ALPHA ANGLE   – 90.6

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X.Y.XP.YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-2.18	6.71	.1775	-.73	2.95	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-2.20	-.74

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.07	4.38	-.3288	-.01	3.43	-.5770	.0065	-.0451	.0180	-1.13	6.34	.2263	-.30	2.42
24	-.09	4.78	-.3705	.01	3.46	-.5900	.1668	-.1204	-.0591	-1.08	6.23	.1793	-.32	2.40
36	-.13	5.60	-.4431	.02	3.99	-.6796	.1111	-.1108	-.0411	-1.09	6.02	.2038	-.31	2.18
48	-.15	5.85	-.4683	.05	4.03	-.6816	.1780	-.1630	-.0680	-1.10	5.93	.1728	-.29	2.17
60	-.21	6.57	-.5262	.07	4.34	-.7394	.1878	-.1871	-.0775	-1.13	5.70	.1658	-.28	1.99
72	-.22	6.92	-.5542	.10	4.25	-.7234	.2181	-.1930	-.1083	-1.13	5.59	.1386	-.28	2.05

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - APRIL
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 27
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-1.36	7.23	.0995	-.77	3.15	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.08	4.25	-.2989	-.00	3.51	-.5600	-.1257	.0701	.0356
24	-.12	4.72	-.3388	-.01	3.60	-.5830	.0156	.0020	-.0219
36	-.19	5.59	-.4077	.01	4.13	-.6701	-.0232	.0266	-.0086
48	-.23	5.97	-.4397	.02	4.22	-.6856	.0767	-.0431	-.0477
60	-.29	6.74	-.4969	.07	4.47	-.7311	.0388	-.0222	-.0290
72	-.32	7.10	-.5252	.08	4.38	-.7154	.1163	-.0750	-.0654

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-1.20	-.78

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-.78	6.90	.1510	-.38	2.61
-.77	6.80	.1194	-.38	2.56
-.80	6.60	.1451	-.37	2.34
-.82	6.49	.1085	-.37	2.30
-.86	6.27	.1374	-.33	2.15
-.88	6.15	.0960	-.33	2.20

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) - CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
4	1/56 - 12/70	0	90.0	-1.08	3.18	-.1579	.47	3.14	900
4	1/56 - 12/70	1	90.0	.96	6.56	-.0311	1.20	5.26	900
4	1/56 - 12/70	2	90.0	3.65	7.14	.0651	.16	5.17	900
4	1/56 - 12/70	3	90.0	6.04	8.04	.0509	-.82	5.97	900
4	1/56 - 12/70	4	90.0	8.60	8.74	.0932	-1.40	6.56	900
4	1/56 - 12/70	5	90.0	11.13	9.69	.1393	-1.70	6.83	900
4	1/56 - 12/70	6	90.0	13.90	10.63	.1611	-1.93	7.29	900
4	1/56 - 12/70	7	90.0	16.79	11.65	.1917	-2.27	8.02	900
4	1/56 - 12/70	8	90.0	19.71	12.80	.1907	-2.69	8.76	900
4	1/56 - 12/70	9	90.0	22.54	14.47	.2126	-3.06	10.00	900
4	1/56 - 12/70	10	90.0	25.57	15.70	.2638	-3.69	11.49	900
4	1/56 - 12/70	11	90.0	28.80	16.91	.2498	-4.35	12.93	900
4	1/56 - 12/70	12	90.0	31.91	17.34	.2684	-4.73	13.94	900
4	1/56 - 12/70	13	30.0	33.91	16.46	.3013	-4.76	13.14	900
4	1/56 - 12/70	14	90.0	32.07	14.38	.3158	-4.34	11.44	900
4	1/56 - 12/70	15	90.0	28.08	12.04	.2965	-3.47	9.14	900
4	1/56 - 12/70	16	90.0	23.03	10.26	.2568	-3.06	7.96	900
4	1/56 - 12/70	17	90.0	17.30	9.19	.2746	-2.45	6.71	900
4	1/56 - 12/70	18	90.0	10.91	7.85	.2764	-2.03	5.23	900
4	1/56 - 12/70	19	90.0	5.31	7.02	.2816	-1.38	4.22	900
4	1/56 - 12/70	20	90.0	1.67	6.07	.2286	-1.05	3.87	900
4	1/56 - 12/70	21	90.0	-.59	5.24	.1737	-1.06	3.25	900
4	1/56 - 12/70	22	90.0	-2.01	4.89	.0979	-.80	3.03	900
4	1/56 - 12/70	23	90.0	-2.73	4.92	.0222	-.72	2.94	900
4	1/56 - 12/70	24	90.0	-2.87	5.27	.0941	-.75	2.97	900
4	1/56 - 12/70	25	90.0	-2.61	5.85	.1895	-.78	3.00	900
4	1/56 - 12/70	26	90.0	-2.18	6.71	.1775	-.73	2.97	900
4	1/56 - 12/70	27	90.0	-1.36	7.23	.0995	-.77	3.15	900

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 1
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.97	5.28	.1271	.94	4.25	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.71	.90

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.06	3.75	-.3582	.01	3.64	-.4287	.0857	.1641	-.1897	-.86	4.86	.1420	.32	3.75
24	-.09	4.75	-.4517	-.00	4.18	-.4939	.0727	.1756	-.2163	-.87	4.61	.1535	.35	3.59
36	-.16	6.00	-.5651	-.03	4.98	-.5892	.1072	.1002	-.2075	-.84	4.29	.1473	.39	3.37
48	-.18	6.57	-.6242	-.04	5.20	-.6146	.0928	.0484	-.1531	-.79	4.10	.1615	.42	3.33
60	-.21	7.09	-.6760	-.05	5.42	-.6462	.1400	-.0224	-.1592	-.78	3.88	.1249	.43	3.23
72	-.21	7.20	-.6891	-.04	5.53	-.6547	.1475	-.0574	-.1360	-.75	3.82	.1187	.45	3.21

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 2
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP |

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
.44	5.68	.2731	-.17	4.49	930	.56	-.30

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.06	3.85	-.3391	.00	3.67	-.4142	.0996	.1107	-.1561	.20	5.30	.3084	.10	4.03
24	-.09	4.74	-.4203	.01	4.28	-.4841	.1596	.0781	-.2032	.19	5.09	.3064	.09	3.86
36	-.15	5.97	-.5296	-.00	5.10	-.5778	.1789	.0162	-.2081	.14	4.77	.3149	.06	3.62
48	-.16	6.44	-.5794	.01	5.39	-.6102	.2075	-.0329	-.2076	.12	4.60	.3122	.05	3.53
60	-.19	7.04	-.6360	.01	5.76	-.6511	.2350	-.0842	-.2155	.09	4.37	.3019	.03	3.39
72	-.22	7.29	-.6635	.04	5.92	-.6662	.2719	-.1273	-.2294	.07	4.24	.2797	.04	3.34

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	– CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD	– MAY	Y = V(AT T)
PERIOD OF RECORD	– 1/56 – 12/70	
ALTITUDE (KM)	– 3	XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE	– 90.0	YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	1.65	6.00	.2818	-.31	4.77	930	•	1.61	-.46

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	3.76	-.3194	.04	3.56	-.3859	.0406	.1436	-.1450	•	.93	5.63	.3236	.28	4.34
24	-.08	4.82	-.4088	.06	4.47	-.4864	.1702	.0754	-.2069	•	.94	5.41	.3125	.25	4.10
36	-.12	5.89	-.4992	.07	5.27	-.5715	.2096	.0179	-.2272	•	.89	5.14	.3131	.18	3.86
48	-.13	6.52	-.5561	.09	5.72	-.6171	.2388	-.0452	-.2220	•	.85	4.95	.3094	.12	3.72
60	-.17	7 06	-.6038	.11	6.10	-.6542	.2388	-.0790	-.2163	•	.81	4.76	.3108	.09	3.59
72	-.21	7.43	-.6427	.13	6.26	-.6702	.2783	-.1220	-.2382	•	.77	4.58	.2879	.08	3.53

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 4
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2.91	6.50	.2669	-.40	5.27	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.05	4.05	-.3221	.07	3.96	-.3913	.1401	.1180	-.1881
24	-.10	5.31	-.4250	.10	5.01	-.4966	.2110	.0712	-.2465
36	-.13	6.35	-.5044	.11	5.77	-.5711	.2589	.0210	-.2833
48	-.15	7.09	-.5608	.15	6.28	-.6200	.2524	-.0236	-.2639
60	-.20	7.59	-.6040	.13	6.73	-.6616	.2504	-.0548	-.2557
72	-.29	7.95	-.6434	.14	6.96	-.6837	.2742	-.0875	-.2705

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
2.76	-.52

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.70	6.08	.2903	.57	4.76
1.68	5.79	.2818	.47	4.47
1.66	5.52	.2689	.39	4.22
1.59	5.32	.2744	.27	4.07
1.52	5.13	.2761	.19	3.90
1.44	4.93	.2616	.17	3.80

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 5
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	4.42	6.86	.2637	-.54	5.70	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.21	-.88

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.06	4.12	-.3154	.05	4.10	-.3719	.1251	.0842	-.1548	•	2.46	6.46	.2837	.75	5.24
24	-.13	5.35	-.4066	.09	5.18	-.4705	.2194	.0407	-.2214	•	2.50	6.20	.2719	.70	4.96
36	-.17	6.44	-.4859	.10	6.15	-.5613	.2655	-.0106	-.2524	•	2.47	5.93	.2618	.59	4.65
48	-.22	7.27	-.5470	.13	6.65	-.6080	.2813	-.0661	-.2504	•	2.37	5.70	.2537	.41	4.48
60	-.32	7.88	-.6034	.11	7.06	-.6451	.2910	-.1012	-.2536	•	2.22	5.44	.2496	.31	4.33
72	-.45	8.34	-.6447	.11	7.36	-.6718	.3145	-.1338	-.2726	•	2.12	5.22	.2298	.27	4.20

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 6
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP · · · CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	6.08	7.47	.2556	-.64	6.52	930		5.67	-.82

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.10	4.56	-.3253	.08	4.44	-.3531	.1115	.0561	-.1233	3.21	7.03	.2764	.63	6.07
24	-.18	5.79	-.4096	.12	5.65	-.4523	.2485	-.0022	-.1999	3.29	6.77	.2587	.65	5.77
36	-.26	6.88	-.4871	.13	6.73	-.5419	.3080	-.0689	-.2253	3.18	6.49	.2465	.49	5.44
48	-.33	7.65	-.5395	.17	7.43	-.5968	.3431	-.1146	-.2526	3.13	6.26	.2261	.43	5.19
60	-.43	8.33	-.5168	.17	7.99	-.6409	.3497	-.1447	-.2592	2.96	5.98	.2217	.33	4.97
72	-.55	8.84	-.6394	.17	8.36	-.6681	.3833	-.1815	-.2881	2.85	5.73	.1928	.30	4.82

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – MAY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 7
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
7.76	8.17	.2787	-.60	7.29	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.11	4.89	-.3244	.07	5.09	-.3534	.1424	.0263	-.1126
24	-.23	6.32	-.4164	.11	6.56	-.4586	.2220	-.0248	-.1538
36	-.28	7.48	-.4909	.13	7.73	-.5430	.2929	-.0960	-.1885
48	-.37	8.26	-.5419	.19	8.46	-.5949	.3268	-.1342	-.2164
60	-.51	8.94	-.5915	.21	9.11	-.6396	.3514	-.1728	-.2332
72	-.64	9.47	-.6324	.21	9.41	-.6584	.3875	-.2024	-.2689

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	7.27	-.62

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.97	7.71	.2990	.72	6.80
3.93	7.41	.2976	.59	6.46
3.87	7.11	.2833	.41	6.11
3.81	6.86	.2702	.39	5.84
3.65	6.59	.2584	.32	5.59
3.54	6.33	.2313	.32	5.47

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MAY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 8
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	9.43	9.09	.2551	-.44	8.27	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.12	5.38	-.3170	.06	5.83	-.3586	.1042	.0408	-.0922
24	-.23	6.89	-.4026	.12	7.38	-.4563	.1818	.0068	-.1391
36	-.28	8.20	-.4743	.15	8.54	-.5314	.2406	-.0524	-.1666
48	-.36	9.11	-.5245	.19	9.34	-.5828	.2967	-.1017	-.2023
60	-.50	10.00	-.5819	.22	9.98	-.6195	.3082	-.1347	-.2109
72	-.65	10.56	-.6203	.21	10.37	-.6403	.3417	-.1687	-.2385

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	8.82	-.62

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
4.81	8.60	.2798	1.00	7.69
4.84	8.30	.2805	.96	7.32
4.83	7.99	.2717	.71	6.98
4.81	7.73	.2522	.64	6.69
4.62	7.39	.2462	.48	6.47
4.48	7.12	.2214	.42	6.34

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD    - MAY                    Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      -  9                     XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE        - 90.0                   YP = V(AT T + DT) - V(AT T)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
11.18	10.03	.2548	-.51	9.67	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
10.43	-.80

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.12	6.13	-.3241	.08	6.55	-.3425	.1194	.0383	-.1048	5.81	9.46	.2761	1.28	9.05
24	-.23	7.82	-.4092	.16	8.48	-.4429	.1940	.0007	-.1470	5.85	9.12	.2759	1.18	8.63
36	-.30	9.42	-.4877	.23	9.94	-.5250	.2323	-.0563	-.1592	5.79	8.74	.2738	.79	8.20
48	-.42	10.45	-.5403	.27	10.86	-.5746	.2630	-.0873	-.1819	5.71	8.43	.2684	.74	7.89
60	-.54	11.43	-.5963	.31	11.61	-.6124	.2971	-.1163	-.2181	5.61	8.04	.2526	.74	7.62
72	-.70	11.95	-.6276	.3.	11.97	-.6297	.3252	-.1503	-.2345	5.46	7.80	.2335	.62	7.49

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 10
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
13.24	11.44	.2736	-.53	11.11	930		12.26	-.95

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.16	7.42	-.3400	.11	7.14	-.3385	.1536	.0177	-.1066		6.98	10.74	.2958	1.35	10.43
24	-.27	9.27	-.4208	.21	9.52	-.4317	.2388	-.0151	-.1611		7.06	10.35	.2951	1.48	9.97
36	-.35	10.97	-.4962	.33	11.18	-.5100	.2497	-.0533	-.1689		6.93	9.92	.3006	1.15	9.52
48	-.51	12.08	-.5447	.39	12.31	-.5602	.2820	-.0904	-.1857		6.81	9.59	.2975	1.03	9.17
60	-.62	13.26	-.6021	.48	13.25	-.6001	.2994	-.1089	-.2125		6.71	9.13	.2958	1.05	8.85
72	-.79	13.80	-.6308	.51	13.58	-.6139	.3185	-.1294	-.2274		6.55	8.87	.2872	1.00	8.74

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - MAY   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 11   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP · · · CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N			GIVEN X	GIVEN Y		
	15.79	12.68	.3133	-.66	12.65	930			14.50	-1.25		

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.17	7.68	-.3200	.17	8.00	-.3202	.1241	-.0103	-.0549	·	8.12	12.01	.3402	.79	11.98
24	-.30	10.19	-.4172	.28	10.62	-.4259	.2138	-.0338	-.1214	·	8.30	11.52	.3477	1.24	11.42
36	-.43	12.00	-.4854	.40	12.64	-.5053	.2432	-.0674	-.1421	·	8.27	11.08	.3563	1.12	10.89
48	-.57	13.33	-.53··	.46	13.85	-.5533	.2852	-.0960	-.1755	·	8.28	10.72	.3546	1.20	10.51
60	-.70	14.50	-.5836	.57	14.72	-.5875	.3035	-.1091	-.2028	·	8.19	10.29	.3577	1.31	10.20
72	-.88	15.35	-.6195	.65	15.34	-.6102	.3307	-.1255	-.2357	·	8.12	9.95	.3494	1.43	9.97

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)   - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD   - MAY                    Y  = V(AT T)
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     - 12                     XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE       - 90.0                   YP = V(AT T + DT) - V(AT T)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP										CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
MEAN X		S.D. X		R (X,Y)		MEAN Y		S.D. Y	N	GIVEN X		GIVEN Y		
18.45		13.93		.3365		-1.11		13.86	930	16.89		-1.66		

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.19	8.00	-.2974	.19	8.40	-.3050	.1329	-.0372	-.0344	9.56	13.30	.3597	-.08	13.20
24	-.36	10.67	-.3917	.31	11.20	-.4104	.2027	-.0473	-.0932	9.72	12.82	.3725	.75	12.63
36	-.48	12.56	-.4591	.43	13.18	-.4829	.2389	-.0718	-.1210	9.68	12.38	.3836	.86	12.12
48	-.60	14.04	-.5078	.51	14.49	-.5297	.2853	-.0962	-.1592	9.74	12.00	.3839	1.06	11.73
60	-.71	15.36	-.5559	.67	15.52	-.5637	.3215	-.1118	-.1989	9.73	11.58	.3841	1.34	11.40
72	-.90	16.35	-.5951	.75	16.20	-.5863	.3486	-.1224	-.2375	9.67	11.19	.3790	1.57	11.16

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - MAY   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 13   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                      | FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	20.47	14.07	.3592	-2.26	13.67	930		18.98	-2.82

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.16	7.37	-.2672	.22	7.56	-.2802	.1262	-.0408	-.0184		10.55	13.55	.3813	-.92	13.12
24	-.33	10.23	-.3683	.33	10.37	-.3880	.2050	-.0583	-.0784		10.72	13.08	.3930	-.05	12.60
36	-.47	12.12	-.4352	.42	12.48	-.4626	.2489	-.0776	-.1164		10.72	12.66	.4033	.30	12.11
48	-.64	13.72	-.4884	.52	14.04	-.5196	.2926	-.0995	-.1588		10.80	12.27	.4062	.61	11.66
60	-.70	15.09	-.5380	.66	15.22	-.5575	.3278	-.1107	-.2038		10.88	11.85	.4074	1.01	11.30
72	-.85	16.08	-.5763	.75	15.97	-.5824	.3621	-.1238	-.2485		10.90	11.48	.3995	1.32	11.04

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 14
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	20.05	12.37	.3922	-2.79	11.84	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	18.78	-3.15

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.16	6.58	-.2718	.16	6.62	-.2912	.1109	.0029	-.0607	10.68	11.90	.4176	.17	11.32
24	-.34	8.71	-.3573	.26	8.95	-.3937	.2268	-.0460	-.1206	10.79	11.55	.4200	.22	10.87
36	-.51	10.66	-.4345	.34	11.01	-.4780	.2865	-.0748	-.1703	10.84	11.13	.4277	.53	10.37
48	-.71	12.10	-.4969	.41	12.44	-.5365	.3576	-.1134	-.2283	10.76	10.72	.4223	.85	9.94
60	-.81	13.36	-.5500	.47	13.38	-.5725	.3912	-.1342	-.2707	10.75	10.31	.4193	1.02	9.64
72	-1.00	14.23	-.5897	.52	14.02	-.5976	.4216	-.1468	-.3163	10.76	9.95	.4100	1.33	9.39

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 15
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	16.85	10.07	.4204	-3.20	9.42	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.15	5.34	-.2739	.06	5.46	-.2923	.1221	.0520	-.1138
24	-.31	7.12	-.3606	.14	7.20	-.3862	.2576	.0055	-.1872
36	-.47	8.54	-.4332	.19	8.85	-.4738	.3121	-.0356	-.2272
48	-.63	9.68	-.4896	.26	9.99	-.5342	.3701	-.0827	-.2697
60	-.78	10.65	-.5414	.29	10.83	-.5789	.3949	-.1156	-.2963
72	-.96	11.31	-.5806	.33	11.36	-.6061	.4199	-.1397	-.3256

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	15.87	-3.55

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
9.42	9.65	.4496	1.20	8.97
9.72	9.34	.4511	1.22	8.63
9.56	9.03	.4576	1.09	8.22
9.48	8.73	.4530	1.04	7.88
9.29	8.42	.4537	.88	7.60
9.12	8.15	.4485	.89	7.40

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	– CAPE KENNEDY	X	= U(AT T)
MONTH OF RECORD	– MAY	Y	= V(AT T)
PERIOD OF RECORD	– 1/56 – 12/70		
ALTITUDE (KM)	– 16	XP	= U(AT T + DT) – U(AT T)
ALPHA ANGLE	– 90.0	YP	= V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
12.60	8.24	- .3767	-3.11	7.39	930	11.89	-3.47

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.14	4.70	-.2920	.07	4.35	-.3067	.0439	.1146	-.1345	7.38	7.82	.4160	1.19	6.97
24	-.27	5.79	-.3575	.11	5.70	-.3992	.1641	.0900	-.1945	7.53	7.61	.4208	1.34	6.67
36	-.41	6.95	-.4285	.16	6.94	-.4821	.2257	.0501	-.2325	7.44	7.36	.4262	1.09	6.36
48	-.55	7.81	-.4834	.17	7.86	-.5434	.2868	-.0116	-.2575	7.24	7.14	.4208	.76	6.10
60	-.74	8.40	-.5241	.21	8.61	-.5940	.3140	-.0601	-.2606	6.90	6.97	.4232	.46	5.86
72	-.92	8.77	-.5546	.24	9.03	-.6257	.3543	-.0980	-.2815	6.67	6.82	.4166	.46	5.68

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - MAY   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 17   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	7.80	6.74	.3549	-2.88	5.90	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.13	4.30	-.3261	.03	4.27	-.3562	.0462	.1186	-.1356
24	-.25	4.76	-.3658	.03	4.89	-.4208	.0437	.1378	-.1513
36	-.38	5.83	-.4467	.07	5.93	-.5110	.1298	.0870	-.1906
48	-.52	6.30	-.4839	.07	6.57	-.5634	.1940	.0168	-.1990
60	-.66	6.84	-.5258	.10	7.11	-.6112	.2731	-.0454	-.2357
72	-.81	7.18	-.5602	.11	7.46	-.6440	.3055	-.0748	-.2573

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	7.42	-3.10

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
4.60	6.32	.4039	.13	5.43
4.47	6.21	.4223	.22	5.27
4.42	5.96	.4322	.02	4.99
4.23	5.85	.4248	-.25	4.81
4.13	5.70	.4111	-.25	4.61
3.97	5.55	.4089	-.24	4.45

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF   Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 18
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R - (X,Y)	MEAN Y	S.D. Y	N
3.34	5.66	.2733	-2.35	4.57	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
3.14	-2.50

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.10	4.24	-.3899	.01	3.85	-.4297	-.0387	.1054	-.0771	1.98	5.19	.3341	-.77	4.10
24	-.23	4.20	-.3934	.03	3.93	-.4364	-.0128	.1481	-.1359	2.06	5.14	.3349	-.55	4.06
36	-.31	5.15	-.4766	.04	4.90	-.5409	.0354	.1148	-.1440	1.92	4.93	.3580	-.64	3.79
48	-.41	5.43	-.5015	.06	5.12	-.5622	.1319	.0747	-.2079	1.96	4.83	.3289	-.56	3.71
60	-.52	5.99	-.5502	.10	5.61	-.6167	.1329	.0485	-.2010	1.84	4.67	.3418	-.63	3.54
72	-.69	6.21	-.5787	.11	5.76	-.6347	.2256	-.0085	-.2522	1.75	4.56	.3055	-.56	3.47

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – MAY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 19
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-.23	4.69	.1905	-1.61	3.56	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.28	-1.60

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.09	3.68	-.4062	.00	3.94	-.5557	-.0767	.0935	-.0189	-.04	4.28	.2653	-.83	2.95
24	-.18	3.50	-.3935	.01	3.44	-.4810	-.0591	.1675	-.0950	.08	4.28	.2541	-.84	3.08
36	-.28	4.24	-.4739	.02	4.35	-.6055	-.0116	.1270	-.0928	-.06	4.11	.2778	-.82	2.80
48	-.37	4.41	-.4971	.02	4.21	-.5863	.0430	.1060	-.1390	-.07	4.04	.2550	-.79	2.84
60	-.47	4.95	-.5522	.03	4.68	-.6526	.0684	.0584	-.1265	-.19	3.89	.2638	-.78	2.67
72	-.63	4.98	-.5719	.06	4.64	-.6521	.1614	.0335	-.1980	-.23	3.82	.2282	-.72	2.65

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — MAY
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM) — 20
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-2.64	4.28	.1699	-1.22	2.90	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.08	3.56	-.4297	.01	3.77	-.6506	.1221	-.0642	-.0656
24	-.17	3.32	-.4059	.02	3.07	-.5249	.1061	.0255	-.1037
36	-.25	3.98	-.4820	.02	4.02	-.6908	.1402	-.0332	-.1162
48	-.36	4.08	-.4957	.02	3.58	-.6136	.1550	.0019	-.1519
60	-.48	4.54	-.5484	.02	4.21	-.7292	.1835	-.0601	-.1561
72	-.60	4.62	-.5606	.03	3.96	-.6852	.1764	-.0468	-.1580

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-2.58	-1.25

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-1.33	3.87	.1951	-.63	2.20
-1.29	3.91	.1914	-.76	2.46
-1.39	3.75	.1903	-.69	2.09
-1.40	3.71	.1824	-.73	2.27
-1.51	3.57	.1687	-.68	1.97
-1.55	3.54	.1710	-.67	2.10

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 21
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-4.49	4.11	.0413	-.75	2.59	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-4.41	-.74

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.10	3.59	-.4510	-.03	3.52	-.6782	-.0364	-.0260	.0409	-2.29	3.66	.0707	-.24	1.90
24	-.20	3.29	-.4122	-.01	3.06	-.5816	-.0194	.0546	-.0298	-2.29	3.74	.0567	-.54	2.10
36	-.28	4.05	-.5048	-.01	3.73	-.7154	-.0279	-.0005	.0193	-2.39	3.55	.0743	-.33	1.81
48	-.40	3.90	-.4818	-.00	3.49	-.6716	-.0399	.0530	-.0082	-2.43	3.60	.0748	-.45	1.91
60	-.49	4.40	-.5455	-.00	3.83	-.7425	-.0065	.0051	-.0069	-2.49	3.44	.0647	-.38	1.73
72	-.63	4.38	-.5444	.01	3.64	-.7127	.0043	.0142	-.0228	-2.55	3.44	.0586	-.41	1.81

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – MAY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 22
ALPHA ANGLE – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-5.71	4.20	-.0480	-.65	2.66	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-5.62	-.68

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.12	3.51	-.4246	-.03	3.63	-.6841	-.1185	.0431	.0691	-2.94	3.81	-.0254	-.16	1.94
24	-.22	3.33	-.4042	-.00	3.14	-.5842	-.0549	.0513	-.0054	-2.92	3.84	-.0584	-.39	2.16
36	-.32	3.96	-.4819	-.05	3.90	-.7258	-.1126	.0524	.0650	-3.02	3.68	-.0247	-.23	1.83
48	-.43	4.06	-.4928	-.04	3.70	-.6880	-.0941	.1093	.0056	-3.01	3.65	-.0349	-.48	1.93
60	-.51	4.39	-.5325	-.07	4.01	-.7528	-.1148	.1118	.0326	-3.07	3.56	-.0177	-.42	1.75
72	-.62	4.42	-.5375	-.03	3.74	-.7003	-.0869	.1056	-.0004	-3.10	3.54	-.0401	-.46	1.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 23
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-6.54	4.22	-.0367	-.48	2.65	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-6.44	-.48

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.11	3.31	-.3957	-.02	3.63	-.6811	-.0713	-.0144	.0652	-3.40	3.87	-.0254	.07	1.93
24	-.20	3.27	-.3975	.00	3.16	-.5896	.0096	-.0320	.0075	-3.35	3.87	-.0576	-.11	2.14
36	-.32	3.78	-.4599	-.03	4.03	-.7508	-.0455	-.0122	.0427	-3.42	3.74	-.0442	-.05	1.75
48	-.42	3.82	-.4660	-.03	3.66	-.6781	.0056	-.0350	.0028	-3.45	3.73	-.0759	-.12	1.94
60	-.55	4.17	-.5144	-.05	4.13	-.7655	-.0323	.0098	.0112	-3.48	3.61	-.0648	-.21	1.70
72	-.63	4.33	-.5312	-.01	3.71	-.6837	-.0221	.0154	-.0108	-3.52	3.57	-.0710	-.25	1.93

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 24
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-7.05	4.56	.0248	-.48	2.77	930	-6.84	-.45

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.11	3.50	-.3999	-.01	3.79	-.6848	-.0071	-.0526	.0313	-3.56	4.18	.0349	.05	2.01
24	-.21	3.43	-.3995	-.01	3.28	-.5933	.0046	-.0648	.0244	-3.54	4.18	.0197	.07	2.22
36	-.33	4.05	-.4750	-.01	4.08	-.7349	.0016	-.0688	.0253	-3.58	4.01	.0191	.04	1.87
48	-.42	4.21	-.4940	-.02	3.77	-.6824	.0657	-.1125	-.0043	-3.62	3.96	-.0185	.02	2.02
60	-.54	4.59	-.5375	-.03	4.30	-.7755	.0557	-.1088	-.0047	-3.69	3.84	-.0269	-.02	1.74
72	-.61	4.58	-.5424	-.04	3.88	-.7062	.0615	-.0785	-.0337	-3.69	3.83	-.0303	-.14	1.96

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 25
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-7.20	5.02	.0060	.53	2.82	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-7.11	-.61

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.13	3.69	-.3790	.01	3.57	-.6360	-.0330	-.0355	.0421	-3.62	4.64	.0160	-.02	2.17
24	-.23	3.68	-.3873	-.00	3.44	-.6100	-.0229	-.0602	.0426	-3.60	4.62	.0046	.06	2.22
36	-.34	4.32	-.4563	.01	4.05	-.7148	.0034	-.0904	.0386	-3.63	4.46	-.0106	.07	1.96
48	-.44	4.55	-.4864	.01	3.93	-.6932	.0505	-.0870	.0018	-3.63	4.38	-.0288	-.11	2.03
60	-.54	4.86	-.5216	.00	4.27	-.7542	.0401	-.0995	.0190	-3.69	4.28	-.0286	-.07	1.84
72	-.66	5.04	-.5462	-.02	3.97	-.7072	.0443	-.0696	-.0037	-3.70	4.20	-.0298	-.20	1.99

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - MAY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 26
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | **CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP**

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-7.18	5.44	.0224	-.62	2.87	930	-7.15	-.58

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.13	3.52	-.3307	.04	3.37	-.5857	-.0741	-.0197	.0595	-3.65	5.13	.0479	.06	2.32
24	-.25	3.81	-.3630	.03	3.56	-.6170	-.0384	-.0431	.0507	-3.65	5.06	.0404	.03	2.25
36	-.36	4.34	-.4159	.04	4.02	-.7038	-.0167	-.0.02	.0584	-3.69	4.94	.0395	.11	2.02
48	-.46	4.74	-.4566	.01	4.12	-.7261	-.0034	-.0766	.0473	-3.72	4.83	.0340	.00	1.96
60	-.56	5.02	-.4867	.02	4.26	-.7487	.0201	-.0701	.0198	-3.72	4.75	.0180	-.11	1.90
72	-.69	5.32	-.5223	.01	3.99	-.7086	.0.09	-.0303	.0023	-3.74	4.64	.0203	-.24	2.03

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD - MAY	Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70	
ALTITUDE (KM) - 27	XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE - 90.0	YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						•	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
-6.96	5.95	.0042	-.64	2.95	930	•	-6.87	-.64

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.10	3.54	-.3068	.02	3.60	-.6099	-.0797	-.0291	.0625	•	-3.54	5.66	.0249	.13	2.32
24	-.22	3.93	-.3459	.03	3.60	-.6112	-.0195	-.0628	.0523	•	-3.53	5.58	.0141	.07	2.32
36	-.34	4.59	-.4041	.03	4.20	-.7141	-.0039	-.1034	.0683	•	-3.60	5.43	.0160	.14	2.04
48	-.44	4.90	-.4322	.01	4.15	-.7070	.0378	-.1067	.0405	•	-3.61	5.36	-.0030	-.01	2.07
60	-.54	5.35	-.4731	-.00	4.28	-.7324	.0617	-.0977	.0129	•	-3.64	5.24	-.0190	-.14	2.00
72	-.66	5.67	-.4998	-.01	4.20	-.7230	.0591	-.0862	.0056	•	-3.72	5.15	-.0228	-.18	2.03

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) - CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5	1/56 - 12/70	0	90.0	-1.67	2.89	-.0657	.53	2.55	930
5	1/56 - 12/70	1	90.0	-.97	5.28	.1271	.94	4.25	930
5	1/56 - 12/70	2	90.0	.44	5.68	.2731	-.17	4.49	930
5	1/56 - 12/70	3	90.0	1.65	6.00	.2818	-.31	4.77	930
5	1/56 - 12/70	4	90.0	2.91	6.50	.2669	-.40	5.27	930
5	1/56 - 12/70	5	90.0	4.42	6.86	.2637	-.54	5.70	930
5	1/56 - 12/70	6	90.0	6.06	7.47	.2556	-.64	6.52	930
5	1/56 - 12/70	7	90.0	7.76	8.17	.2787	-.60	7.29	930
5	1/56 - 12/70	8	90.0	9.43	9.09	.2551	-.44	8.27	930
5	1/56 - 12/70	9	90.0	11.18	10.03	.2548	-.51	9.67	930
5	1/56 - 12/70	10	90.0	13.24	11.44	.2736	-.53	11.11	930
5	1/56 - 12/70	11	90.0	15.79	12.68	.3133	-.66	12.65	930
5	1/56 - 12/70	12	90.0	18.45	13.93	.3365	-1.11	13.86	930
5	1/56 - 12/70	13	90.0	20.47	14.07	.3592	-2.26	13.67	930
5	1/56 - 12/70	14	90.0	20.05	12.37	.3922	-2.79	11.84	930
5	1/56 - 12/70	15	90.0	16.85	10.07	.4204	-3.20	9.42	930
5	1/56 - 12/70	16	90.0	12.60	8.24	.3767	-3.11	7.39	930
5	1/56 - 12/70	17	90.0	7.80	6.74	.3549	-2.88	5.90	930
5	1/56 - 12/70	18	90.0	3.34	5.66	.2733	-2.35	4.57	930
5	1/56 - 12/70	19	90.0	-.23	4.69	.1905	-1.61	3.56	930
5	1/56 - 12/70	20	90.0	-2.64	4.28	.1699	-1.22	2.90	930
5	1/56 - 12/70	21	90.0	-4.49	4.11	.0413	-.75	2.59	930
5	1/56 - 12/70	22	90.0	-5.71	4.20	-.0480	-.65	2.66	930
5	1/56 - 12/70	23	90.0	-6.54	4.22	-.0367	-.48	2.65	930
5	1/56 - 12/70	24	90.0	-7.05	4.56	.0248	-.48	2.77	930
5	1/56 - 12/70	25	90.0	-7.20	5.02	.0060	-.63	2.82	930
5	1/56 - 12/70	26	90.0	-7.18	5.44	.0224	-.62	2.87	930
5	1/56 - 12/70	27	90.0	-6.96	5.95	.0042	-.64	2.95	930

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 0
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.08	2.68	.0014	.93	2.38	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.02	3.32	-.6267	-.00	2.65	-.5577	-.1768	.1392	.0614
24	.04	2.69	-.5088	-.01	2.55	-.5366	-.0068	.0959	-.0910
36	.05	3.72	-.6995	.02	3.00	-.6397	-.1739	.1757	.0314
48	.09	3.11	-.5868	.04	3.03	-.6522	-.0474	.0860	-.0421
60	.11	3.97	-.7490	.06	3.21	-.6927	-.1189	.1169	.0302
72	.13	3.24	-.6172	.08	3.23	-.6981	-.0190	.0474	-.0351

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-1.10	.99

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-.56	2.08	.0953	.41	1.98
-.60	2.29	-.0006	.34	2.00
-.57	1.90	.1245	.40	1.83
-.53	2.16	.0106	.40	1.80
-.51	1.77	.1019	.43	1.72
-.48	2.10	-.0037	.43	1.70

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALT'TUDE (KM)   - 1
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.12	5.13	.19_:	1.65	3.86	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.22	1.83

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.02	3.96	-.3886	.02	3.20	-.4096	.1847	.0779	-.2218	-.42	4.66	.1917	.72	3.47
24	.07	4.53	-.4446	.03	3.99	-.5157	.1375	.1275	-.2424	-.38	4.50	.2057	.73	3.21
36	.12	5.75	-.5701	.08	4.77	-.6211	.1477	.0584	-.2345	-.22	4.14	.2073	.74	2.97
48	.17	6.05	-.5988	.09	5.07	-.6614	.1099	.0449	-.1922	-.13	4.06	.2284	.76	2.66
60	.21	6.67	-.6605	.10	5.33	-.6962	.1589	-.0371	-.1982	-.04	3.82	.1911	.76	2.76
72	.26	6.66	-.6616	.10	5.31	-.6976	.1320	-.0326	-.1687	.00	3.82	.2127	.76	2.76

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 2
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.27	5.04	.1908	.92	4.00	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.38	1.17

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.01	3.64	-.3691	.03	3.51	-.4364	.0832	.1121	-.1600	.38	4.64	.2133	.57	3.55
24	.02	4.39	-.4421	.04	4.12	-.5109	.1580	.0902	-.2205	.40	4.45	.2010	.55	3.37
36	.05	5.38	-.5421	.06	5.03	-.6277	.1192	.0595	-.1860	.47	4.19	.2274	.49	3.06
48	.04	5.84	-.5864	.07	5.24	-.6540	.1460	.0196	-.1970	.49	4.04	.2127	.47	2.99
60	.06	6.25	-.6300	.06	5.56	-.6958	.1378	-.0035	-.1819	.51	3.88	.2209	.44	2.85
72	.08	6.50	-.6531	.04	5.45	-.6861	.1529	-.0220	-.1927	.52	3.79	.3054	.41	2.89

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD — JUNE   Y = V(AT T)
PERIOD OF RECORD — 1/55 - 12/70
ALTITUDE (KM) — 3   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE — 90.0   YP = V(AT T + DT) - V(AT T)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP									•	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N				•	GIVEN X		GIVEN Y		
	1.87	5.05	.1333	.76	4.11	900				•	1.96		.95		

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.01	3.41	-.3381	.02	3.72	-.4497	.0329	.1399	-.1249	•	.74	4.71	.1568	.66	3.62
24	-.02	4.31	-.4280	.01	4.26	-.5141	.1179	.1144	-.1897	•	.75	4.51	.1437	.61	3.45
36	-.03	5.24	-.5199	.02	5.20	-.6275	.0774	.0923	-.1514	•	.79	4.27	.1700	.51	3.15
48	-.04	5.71	-.5632	.02	5.44	-.6549	.0825	.0602	-.1433	•	.80	4.14	.1678	.45	3.07
60	-.04	6.21	-.6155	.01	5.79	-.6980	.0822	.0395	-.1340	•	.81	3.95	.1775	.41	2.92
72	-.04	6.51	-.6434	-.03	5.70	-.6845	.0962	.0230	-.1472	•	.81	3.84	.1616	.38	2.97

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JUNE
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 4
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2.27	5.26	.1406	.59	4.25	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
2.38	.76

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	3.41	-.3167	-.02	3.67	-.4251	.0375	.1339	-.1147	.98	4.96	.1649	.65	3.80
24	-.08	4.28	-.3955	-.02	4.32	-.5023	.1329	.1198	-.1923	.99	4.78	.1492	.65	3.59
36	-.12	5.26	-.4870	-.03	5.24	-.6113	.0862	.0991	-.1552	.98	4.56	.1758	.50	3.30
48	-.14	5.76	-.5354	-.03	5.50	-.6404	.0933	.0700	-.1509	.98	4.41	.1768	.44	3.22
60	-.17	6.33	-.5907	-.02	5.84	-.6786	.0818	.0436	-.1267	.97	4.23	.1927	.37	3.10
72	-.15	6.70	-.6266	-.05	5.83	-.6737	.1069	.0174	-.1428	.98	4.08	.1753	.33	3.12

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JUNE
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 5
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2.56	5.57	.1087	.26	4.41	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
2.63	.42

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	3.65	-.3262	-.01	3.89	-.4399	-.0610	.1694	-.0854	1.14	5.23	.1423	.52	3.91
24	-.08	4.62	-.4089	-.00	4.37	-.4940	.0400	.1440	-.1507	1.17	5.03	.1302	.48	3.77
36	-.13	5.59	-.4949	-.00	5.28	-.6006	.0291	.1277	-.1310	1.16	4.80	.1497	.37	3.47
48	-.17	6.17	-.5448	.01	5.53	-.6245	.0458	.0911	-.1271	1.15	4.64	.1463	.30	3.40
60	-.19	6.65	-.5882	.02	5.86	-.6627	.0351	.0841	-.1129	1.14	4.48	.1623	.27	3.27
72	-.19	6.93	-.6153	.01	5.88	-.6626	.0496	.0601	-.1135	1.15	4.37	.1550	.22	3.28

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY

MONTH OF RECORD   — JUNE

PERIOD OF RECORD — 1/56 — 12/70

ALTITUDE (KM)   — 6

ALPHA ANGLE   — 90.0

$X = U(AT\ T)$

$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$

$YP = V(AT\ T + DT) - V(AT\ T)$

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP										CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N						GIVEN X		GIVEN Y		
	2.91	5.92	.1681	-.13	4.71	900						2.90		-.02		
DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.08	3.88	-.3275	-.02	3.83	-.4078	-.0106	.1411	-.1058		1.42	5.55	.2000	.36	4.25
24	-.12	4.94	-.4143	-.01	4.67	-.4950	.0835	.1198	-.1706		1.46	5.32	.1934	.34	4.02
36	-.17	5.86	-.4892	-.02	5.52	-.5856	.0566	.1098	-.1464		1.42	5.11	.2195	.22	3.76
48	-.24	6.40	-.5333	-.01	5.84	-.6178	.0876	.0676	-.1523		1.39	4.96	.2113	.16	3.66
60	-.30	6.99	-.5841	-.00	6.21	-.6538	.0694	.0602	-.1350		1.35	4.77	.2331	.11	3.53
72	-.34	7.27	-.6101	-.01	6.25	-.6565	.0910	.0293	-.1382		1.32	4.66	.2220	.06	3.53

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 7
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.61	6.54	.2292	-.25	5.10	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.10	4.36	-.3320	-.02	3.98	-.3996	.1151	.0806	-.1491
24	-.16	5.43	-.4106	-.01	4.95	-.4902	.1215	.0902	-.1832
36	-.27	6.44	-.4899	-.02	5.65	-.5566	.1352	.0610	-.1937
48	-.37	7.00	-.5330	-.05	6.08	-.5964	.1157	.0452	-.1681
60	-.44	7.59	-.5811	-.07	6.48	-.6368	.1305	.0114	-.1702
72	-.53	7.92	-.6094	-.07	6.72	-.6613	.1578	-.0156	-.1841

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
3.48	-.16

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.92	6.13	.2469	.36	4.63
1.90	5.90	.2563	.35	4.38
1.83	5.64	.2629	.24	4.18
1.75	5.49	.2826	.14	4.05
1.70	5.29	.2823	.06	3.90
1.65	5.15	.2732	.03	3.80

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 8
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
4.26	-7.32	.2449	-.29	5.77	900	3.88	-.25

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.11	4.65	-.3231	-.02	4.39	-.3828	.1051	.0685	-.1276	2.34	6.89	.2664	.37	5.30
24	-.19	5.85	-.4012	-.00	5.36	-.4659	.1266	.0610	-.1592	2.33	6.66	.2724	.33	5.06
36	-.31	7.00	-.4764	-.04	6.20	-.5356	.1341	.0442	-.1728	2.27	6.38	.2823	.23	4.83
48	-.44	7.51	-.5127	-.07	6.74	-.5811	.1186	.0252	-.1488	2.17	6.25	.2980	.12	4.67
60	-.56	8.31	-.5692	-.12	7.18	-.6251	.1355	-.0053	-.1555	2.09	5.99	.3022	.03	4.48
72	-.66	8.56	-.5890	-.12	7.45	-.6529	.1493	-.0310	-.1516	2.02	5.89	.3035	-.02	4.36

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 9
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP		

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
5.20	8.50	.2755	-.29	6.84	900	4.68	-.31

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.14	5.33	-.3201	-.03	4.98	-.3687	.1536	.0194	-.1151	2.85	8.04	.2931	.34	6.34
24	-.27	6.67	-.3918	-.04	6.19	-.4590	.1615	.0048	-.1279	2.82	7.80	.3040	.26	6.05
36	-.43	7.81	-.4584	-.08	7.24	-.5320	.1768	-.0168	-.1471	2.74	7.54	.3101	.18	5.77
48	-.55	8.52	-.5006	-.11	7.77	-.5696	.1611	-.0251	-.1358	2.65	7.35	.3263	.10	5.60
60	-.63	9.40	-.5555	-.16	8.24	-.6103	.1816	-.0617	-.1421	2.55	7.06	.3284	-.02	5.41
72	-.82	9.71	-.5744	-.19	8.52	-.6339	.1835	-.0796	-.1356	2.46	6.96	.3330	-.08	5.28

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (M)   - 10
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP		

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
5.94	9.81	.2893	-.45	8.26	300	5.28	-.50

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.16	5.67	-.3044	-.03	6.16	-.3793	.1727	-.0260	-.0915	3.27	9.33	.3027	.10	7.63
24	-.33	7.29	-.3750	-.03	7.62	-.4720	.1357	-.0153	-.0974	3.19	9.08	.3206	.10	7.27
36	-.48	8.77	-.4514	-.08	8.68	-.5384	.1662	-.0417	-.1275	3.12	8.74	.3226	.03	6.95
48	-.60	9.54	-.4932	-.09	9.17	-.5710	.1575	-.0490	-.1240	3.03	8.52	.3347	-.03	6.77
60	-.78	10.41	-.5372	-.14	9.76	-.6131	.1790	-.0825	-.1309	2.92	8.26	.3359	-.13	6.52
72	-.92	10.76	-.5558	-.18	10.14	-.6383	.1680	-.0879	-.1214	2.84	8.15	.3479	-.19	6.35

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 11
ALPHA ANGLE - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$
$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
6.75	11.13	.3194	-.74	9.58	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	6.02	-.88

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
										3.70	10.62	.3343	.00	8.93
12	-.18	6.47	-.2972	-.08	6.78	-.3595	.1769	-.0301	-.0882	3.61	10.32	.3436	.04	8.54
24	-.37	8.10	-.3724	-.07	8.38	-.4498	.1794	-.0356	-.1151	3.50	9.89	.3426	-.11	8.13
36	-.54	9.90	-.4564	-.10	9.81	-.5284	.2210	-.0842	-.1432	3.36	9.68	.3512	-.28	7.90
48	-.72	10.66	-.4933	-.14	10.39	-.5647	.1957	-.0988	-.1295	3.21	9.40	.3473	-.44	7.64
60	-.94	11.57	-.5350	-.22	10.93	-.6025	.2175	-.1379	-.1355	3.12	9.26	.3607	-.49	7.46
72	-1.13	12.02	-.5544	-.30	11.33	-.6268	.1904	-.1280	-.1290					

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 12
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP		

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	7.90	12.59	.3353	-1.60	10.92	900	7.14	-1.78

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.21	7.24	-.2951	-.10	7.13	-.3413	.1967	-.0697	-.0694	4.19	12.03	.3462	-.76	10.26
24	-.39	8.80	-.3604	-.11	8.85	-.4212	.1919	-.0672	-.0978	4.15	11.74	.3536	-.59	9.90
36	-.60	10.83	-.4491	-.13	10.64	-.5075	.2314	-.1058	-.1341	3.99	11.24	.3541	-.64	9.41
48	-.84	11.76	-.4880	-.20	11.27	-.5441	.1934	-.1074	-.1241	3.84	10.98	.3644	-.78	9.16
60	-1.12	12.78	-.5332	-.33	12.06	-.5916	.2128	-.1482	-.1326	3.63	10.65	.3596	-.99	8.80
72	-1.36	13.31	-.5511	-.44	12.37	-.6101	.1723	-.1238	-.1231	3.55	10.50	.3785	-1.02	8.65

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 13
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8.72	13.28	.3392	-2.88	11.03	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.25	7.30	-.2798	-.09	6.85	-.3261	.1680	-.0463	-.0702
24	-.46	8.86	-.3362	-.11	8.52	-.4031	.1897	-.0470	-.1048
36	-.71	10.85	-.4177	-.14	10.22	-.4853	.2220	-.0773	-.1403
48	-1.00	11.91	-.4581	-.22	11.12	-.5327	.1836	-.0851	-.1272
60	-1.36	13.02	-.5036	-.35	12.02	-.5845	.2163	-.1326	-.1416
72	-1.68	13.58	-.5234	-.46	12.45	-.6079	.1816	-.1302	-.1207

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
7.96	-3.03

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
4.74	12.75	.3512	-1.23	10.43
4.77	12.49	.3563	-1.02	10.09
4.30	12.05	.3576	-1.06	9.64
4.38	11.79	.3690	-1.28	9.34
4.11	11.46	.3617	-1.50	8.95
3.91	11.31	.3780	-1.67	8.76

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - JUNE   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 14   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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| | QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | • | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP |

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
	7.79	12.41	.3262	-4.21	9.48	900	•	7.01	-4.33

DT HR	MEAN XP	S.D. XP	R (X XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.27	6.13	-.2482	-.07	6.18	-.3368	.0733	-.0022	-.0519	•	4.46	12.01	.3449	-1.74	8.92
24	-.49	7.47	-.2945	-.11	7.27	-.3958	.1408	-.0147	-.0860	•	4.53	11.84	.3472	-1.60	8.69
36	-.74	9.35	-.3743	-.13	8.84	-.4849	.1882	-.0456	-.1288	•	4.42	11.48	.3469	-1.61	8.28
48	-1.02	10.27	-.4094	-.17	9.80	-.5444	.1806	-.0652	-.1303	•	4.23	11.30	.3518	-1.74	7.94
60	-1.39	11.56	-.4641	-.24	10.42	-.5849	.1883	-.0899	-.1448	•	4.00	10.97	.3498	-1.87	7.68
72	-1.71	12.15	-.4853	-.32	10.94	-.6163	.1832	-.1027	-.1433	•	3.81	10.83	.3533	-1.99	7.46

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JUNE
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 15
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.30	10.32	.2622	-5.01	7.18	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.54	-5.15

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.26	5.06	-.2492	-.01	4.89	-.3534	.0963	.0378	-.0815	3.55	9.98	.2783	-1.80	6.70
24	-.49	6.04	-.2919	-.04	5.83	-.4258	.1172	.0565	-.1250	3.72	9.82	.2793	-1.61	6.45
36	-.73	7.54	-.3663	-.03	6.87	-.5033	.1618	-.0001	-.1469	3.46	9.56	.2722	-1.83	6.18
48	-.98	8.31	-.4039	-.08	7.46	-.5513	.1353	-.0087	-.1439	3.26	9.39	.2757	-1.96	5.97
60	-1.27	9.30	-.4595	-.08	7.90	-.5855	.1547	-.0385	-.1568	3.01	9.12	.2708	-2.04	5.81
72	-1.55	9.95	-.4882	-.15	8.23	-.6136	.1502	-.0540	-.1566	2.83	8.96	.2690	-2.14	5.66

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — JUNE
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM)   — 16
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.95	7.55	.2393	-4.20	5.28	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.42	-4.31

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.22	4.24	-.2925	.01	4.22	-.4089	.0302	.0537	-.0691	1.57	7.20	.2650	-1.85	4.81
24	-.43	4.69	-.3282	.01	4.49	-.4411	.1145	.0600	-.1391	1.75	7.09	.2545	-1.66	4.70
36	-.64	5.76	-.3957	.01	5.32	-.5308	.1297	.0338	-.1589	1.59	6.88	.2531	-1.67	4.44
48	-.88	6.26	-.4319	.01	5.69	-.5661	.1442	-.0022	-.1622	1.37	6.77	.2456	-1.73	4.33
60	-1.09	6.91	-.4774	-.02	6.11	-.6123	.1579	-.0282	-.1699	1.20	6.59	.2426	-1.76	4.16
72	-1.32	7.26	-.5061	-.06	6.35	-.6347	.1717	-.0556	-.1790	1.03	6.47	.2297	-1.82	4.07

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 17
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.15	5.58	.1917	-3.02	4.11	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.18	3.88	-.3629	.02	4.03	-.5047	.0126	.0521	-.0484
24	-.35	3.84	-.3615	.03	3.98	-.5062	.0453	.0573	-.0727
36	-.50	4.64	-.4355	.01	4.66	-.5984	.1013	.0168	-.1096
48	-.66	4.99	-.4650	.02	4.72	-.6121	.1519	-.0316	-.1239
60	-.83	5.44	-.5127	.00	5.06	-.6587	.1493	-.0613	-.1282
72	-1.00	5.70	-.5398	-.01	5.04	-.6566	.1791	-.0939	-.1402

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-1.47	-3.09

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-.29	5.19	.2351	-1.50	3.54
-.31	5.19	.2299	-1.47	3.53
-.40	5.01	.2226	-1.43	3.27
-.53	4.93	.2066	-1.38	3.24
-.63	4.78	.1956	-1.37	3.09
-.75	4.69	.1771	-1.37	3.10

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56   12/70
ALTITUDE (KM)   - 18
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-4.21	4.44	.1154	-2.06	3.19	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-4.38	-2.18

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XF,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.16	3.76	-.4336	.03	3.80	-.6024	-.0767	.0415	.0269	-2.03	4.00	.1801	-.93	2.54
24	-.28	3.50	-.4054	.03	3.37	-.5490	-.0584	.1080	-.0436	-1.89	4.0?	.1615	-1.21	2.65
36	-.43	4.16	-.4939	.04	4.05	-.6553	.0077	.0409	-.0515	-2.02	3.8?	.1593	-1.06	2.40
48	-.56	4.20	-.5007	.03	3.85	-.6336	.0612	.0047	-.0812	-2.08	3.84	.1282	-1.02	2.46
60	-.67	4.64	-.5552	.03	4.26	-.6953	.1069	-.0488	-.1020	-2.16	3.69	.0981	-.97	2.29
72	-.76	4.70	-.5615	.02	4.18	-.6859	.1102	-.0372	-.1173	-2.18	3.67	.0938	-1.00	2.32

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – JUNE
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 19
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	-6.68	3.78	.1341	-1.22	2.75	900	-6.73	-1.26

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.12	3.56	-.4801	.03	3.65	-.6715	.0949	-.0897	-.0323	-3.32	3.32	.1539	-.44	2.04
24	-.25	3.18	-.4338	.04	3.00	-.5679	-.0407	.0710	-.0275	-3.24	3.41	.1884	-.82	2.26
36	-.36	3.84	-.5226	.06	3.75	-.7101	.1432	-.0926	-.0809	-3.39	3.23	.1356	-.58	1.93
48	-.46	3.82	-.5276	.06	3.29	-.6324	.0667	-.0244	-.0534	-3.39	3.21	.1666	-.61	2.13
60	-.56	4.26	-.5896	.08	3.83	-.7260	.1938	-.1307	-.1219	-3.45	3.06	.0927	-.57	1.89
72	-.65	4.24	-.5891	.07	3.43	-.6603	.1296	-.0725	-.0927	-3.47	3.06	.1327	-.57	2.06

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 20
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-8.64	3.87	.1176	-.93	2.56	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.08	4.54	-.5945	-.01	3.46	-.6758	.0876	-.0643	-.0516
24	-.20	3.20	-.4171	.00	3.18	-.6311	-.0214	.0423	-.0093
36	-.29	4.84	-.6316	.01	3.63	-.7174	.1327	-.0926	-.0864
48	-.40	3.84	-.5004	.00	3.44	-.6837	.0498	-.0218	-.0288
60	-.46	5.15	-.6702	.01	3.74	-.7385	.1722	-.1233	-.1122
72	-.57	4.21	-.5474	-.01	3.49	-.6903	.1085	-.0703	-.0573

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X			GIVEN Y	
	-8.66			-.98	
MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
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-4.30	3.11	.1344	-.42	1.89
-4.34	3.52	.1756	-.63	1.99
-4.41	3.00	.1059	-.44	1.79
-4.47	3.35	.1646	-.50	1.87
-4.51	2.87	.0745	-.45	1.73
-4.57	3.24	.1331	-.46	1.86

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — JUNE
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM) — 21
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-10.10	3.85	-.1068	-.57	2.63	900	-10.07	-.61

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.08	4.83	-.6306	-.01	3.87	-.7356	-.3399	.2300	.2335	-5.14	2.99	.0998	-.14	1.78
24	-.20	3.33	-.4185	-.01	3.13	-.5943	-.0531	.0455	.0240	-5.31	3.50	-.1188	-.38	2.12
36	-.27	4.99	-.6414	-.02	4.01	-.7618	-.2776	.1906	.2035	-5.32	2.96	.0705	-.15	1.70
48	-.39	3.74	-.4598	-.01	3.43	-.6494	-.0071	.0056	.0080	-5.52	3.42	-.1497	-.28	2.00
6J	-.45	5.35	-.6813	-.05	4.01	-.7536	-.2328	.1845	.1585	-5.38	2.82	.0391	-.33	1.73
72	-.54	4.17	-.5172	-.06	3.45	-.6423	.0261	-.0025	-.0273	-5.53	3.30	-.1784	-.38	2.02

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – JUNE
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 22
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP		

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	-11.43	3.65	-.1461	-.44	2.99	900		-11.41	-.44

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.08	4.01	-.5515	-.01	4.63	-.7760	-.3447	.2305	.2189	-5.86	3.05	.0072	.13	1.88
24	-.18	3.40	-.4585	-.00	3.36	-.5623	-.0731	.0338	.0380	-5.91	3.25	-.1742	-.15	2.47
36	-.26	4.14	-.5628	.01	4.72	-.7903	-.2808	.2282	.1648	-5.91	3.02	-.0243	-.27	1.83
48	-.37	3.77	-.5066	.04	3.64	-.6025	-.0631	.0430	.0342	-6.02	3.15	-.1786	-.25	2.39
60	-.48	4.34	-.5844	.04	4.84	-.8032	-.2712	.2310	.1681	-6.08	2.97	-.0071	-.32	1.78
72	-.58	4.02	-.5414	.02	3.60	-.5958	-.0013	.0063	.0131	-6.11	3.07	-.2004	-.26	2.40

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 23
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
	-12.57	3.81	-.0813	-.43	2.96	900	-12.54	-.40

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.10	3.88	-.5062	-.00	4.49	-.7599	-.1105	.0397	.0932	-6.45	3.28	-.0585	.20	1.92
24	-.21	3.56	-.4617	-.01	3.38	-.5746	-.1674	.0788	.0945	-6.53	3.38	-.0483	-.04	2.42
36	-.29	4.07	-.5287	-.01	4.57	-.7785	-.0800	.0470	.0628	-6.53	3.23	-.0759	-.09	1.85
48	-.38	4.08	-.5275	.02	3.49	-.5917	-.1041	.0569	.0662	-6.60	3.23	-.0651	-.18	2.38
60	-.48	4.35	-.5635	.02	4.68	-.7914	-.0710	.0586	.0476	-6.63	3.14	-.0837	-.23	1.81
72	-.58	4.21	-.5460	.01	3.74	-.6319	-.0790	.0652	.0354	-6.65	3.19	-.0779	-.35	2.29

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 24
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-13.31	4.11	-.0422	-.42	2.71	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-13.27	-.42

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.12	4.17	-.5018	-.01	3.91	-.7210	-.0294	-.0013	.0376	-6.82	3.56	-.0440	-.02	1.87
24	-.22	3.75	-.4530	-.02	3.52	-.6497	-.1402	.0784	.0812	-6.88	3.67	.0071	-.09	2.06
36	-.33	4.35	-.5251	-.04	4.02	-.7458	-.0042	-.0023	.0123	-6.89	3.50	-.0633	-.18	1.80
48	-.42	4.16	-.5066	-.02	3.68	-.6769	-.1608	.1189	.0751	-6.86	3.55	.0216	-.31	1.99
60	-.52	4.57	-.5570	-.02	3.99	-.7352	-.0052	.0020	.0066	-6.92	3.42	-.0681	-.21	1.84
72	-.64	4.32	-.5260	-.01	3.74	-.6835	-.0796	.0649	.0262	-6.96	3.50	-.0302	-.30	1.98

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JUNE
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 23
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-13.98	4.45	-.0665	-.57	2.64	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-13.97	-.61

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.13	4.48	-.4985	-.02	3.46	-.6566	-.1067	.0552	.0622	-7.14	3.86	-.0506	-.15	1.99
24	-.24	4.07	-.4565	-.03	3.51	-.6695	-.1707	.1047	.0707	-7.11	3.96	-.0356	-.19	1.96
36	-.35	4.73	-.5322	-.05	3.72	-.7129	-.0925	.0553	.0432	-7.15	3.77	-.0697	-.21	1.85
48	-.47	4.38	-.5033	-.04	3.77	-.7236	-.1320	.0923	.0481	-7.03	3.85	-.0558	-.26	1.82
60	-.59	4.93	-.5653	-.05	3.78	-.7246	-.0914	.0677	.0330	-7.12	3.67	-.0734	-.30	1.82
72	-.70	4.68	-.5459	-.06	3.78	-.7207	-.1137	.0506	.0634	-7.10	3.73	-.0653	-.05	1.83

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD CF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 26
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-14.34	4.69	-.0763	-.69	2.82	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.11	4.33	-.4574	-.03	3.85	-.6830	-.1273	.0636	.0663
24	-.20	4.27	-.4321	-.01	3.87	-.6871	-.0975	.0394	.0507
36	-.33	4.78	-.4856	-.02	3.99	-.7050	-.1662	.0825	.0973
48	-.45	4.81	-.4970	-.03	3.91	-.6872	-.0682	-.0008	.0536
60	-.59	5.04	-.5263	-.06	4.04	-.7139	-.0656	.0298	.0517
72	-.70	5.05	-.5334	-.06	3.94	-.6932	-.0628	.0252	.0345

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-14.31	-.68

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-7.33	4.17	-.0642	-.14	2.06
-7.67	4.23	-.0816	-.09	2.05
-7.73	4.10	-.0396	-.06	2.00
-7.66	4.07	-.1004	.03	2.04
-7.63	3.99	-.0941	-.13	1.97
-7.59	3.97	-.1057	-.21	2.03

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JUNE
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 27
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-14.65	5.04	-.0857	-.85	2.88	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.14	4.30	-.4305	-.01	3.96	-.6911	-.1246	.0398	.0764
24	-.26	4.43	-.4417	-.00	3.81	-.6627	-.0736	.0193	.0391
36	-.39	5.02	-.4991	.02	4.15	-.7210	-.1203	.0320	.0807
48	-.51	5.10	-.5137	.02	4.00	-.6911	-.0784	.0247	.0456
60	-.65	5.35	-.5416	.02	4.11	-.7061	-.1108	.0444	.0687
72	-.75	5.46	-.5560	.02	3.92	-.6680	-.0571	.0322	.0186

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X			GIVEN Y	
	-14.58			-.83	
	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
	-7.45	4.55	-.0810	.02	2.08
	-7.48	4.52	-.1084	-.16	2.16
	-7.59	4.37	-.0915	.04	1.99
	-7.52	4.33	-.1119	-.19	2.08
	-7.57	4.24	-.0932	-.17	2.04
	-7.52	4.19	-.1239	-.39	2.15

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) – CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
6	1/56 – 12/70	0	90.0	-1.08	2.68	.0014	.93	2.38	900
6	1/56 – 12/70	1	90.0	.12	5.13	.1921	1.65	3.86	900
6	1/56 – 12/70	2	90.0	1.27	5.04	.1908	.92	4.00	900
6	1/56 – 12/70	3	90.0	1.87	5.05	.1333	.76	4.11	900
6	1/56 – 12/70	4	90.0	2.27	5.26	.1406	.59	4.25	900
6	1/56 – 12/70	5	90.0	2.56	5.57	.1087	.26	4.41	900
6	1/56 – 12/70	6	90.0	2.91	5.92	.1681	-.13	4.71	900
6	1/56 – 12/70	7	90.0	3.61	6.54	.2292	-.25	5.10	900
6	1/56 – 12/70	8	90.0	4.26	7.32	.2449	-.29	5.77	900
6	1/56 – 12/70	9	90.0	5.20	8.50	.2755	-.29	6.84	900
6	1/56 – 12/70	10	90.0	5.94	9.81	.2893	-.45	8.26	900
6	1/56 – 12/70	11	90.0	6.75	11.13	.3194	-.74	9.58	900
6	1/56 – 12/70	12	90.0	7.90	12.59	.3353	-1.60	10.92	900
6	1/56 – 12/70	13	90.0	8.72	13.28	.3392	-2.88	11.03	900
6	1/56 – 12/70	14	90.0	7.79	12.41	.3262	-4.21	9.48	900
6	1/56 – 12/70	15	90.0	5.30	10.32	.2622	-5.01	7.18	900
6	1/56 – 12/70	16	90.0	1.95	7.55	.2393	-4.20	5.28	900
6	1/56 – 12/70	17	90.0	-1.15	5.58	.1917	-3.02	4.11	900
6	1/56 – 12/70	18	90.0	-4.21	4.44	.1154	-2.06	3.19	900
6	1/56 – 12/70	19	90.0	-6.68	3.78	.1341	-1.22	2.75	900
6	1/56 – 12/70	20	90.0	-8.64	3.87	.1176	-.93	2.56	900
6	1/56 – 12/70	21	90.0	-10.10	3.85	-.1068	-.57	2.63	900
6	1/56 – 12/70	22	90.0	-11.43	3.65	-.1461	-.44	2.99	900
6	1/56 – 12/70	23	90.0	-12.57	3.81	-.0813	-.43	2.96	900
6	1/56 – 12/70	24	90.0	-13.31	4.11	-.0422	-.42	2.71	900
6	1/56 – 12/70	25	90.0	-13.98	4.45	-.0665	-.57	2.64	900
6	1/56 – 12/70	26	90.0	-14.34	4.69	-.0763	-.69	2.82	900
6	1/56 – 12/70	27	90.0	-14.65	5.04	-.0857	-.85	2.88	900

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X. Y, XP, YP

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STATION (12868)    - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD    - JULY                  Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 0                     XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE        - 90.0                  YP = V(AT T + DT) - V(AT T)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP								CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	-.60	2.29	-.1376	1.48	1.84	930		-.62	1.63

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.02	2.86	-.6311	.02	2.35	-.6381	-.3576	.2397	.2099	-.30	1.78	.0061	.68	1.42
24	.03	2.30	-.5119	.04	2.26	-.6191	-.1724	.1357	.0642	-.31	1.97	-.1230	.67	1.45
36	.06	3.06	-.6939	.03	2.53	-.6881	-.2633	.1981	.1686	-.27	1.67	-.0188	.67	1.34
48	.03	2.72	-.6127	.02	2.51	-.6851	-.1330	.1158	.0689	-.27	1.81	-.1308	.66	1.34
60	.07	3.23	-.7202	.02	2.65	-.7246	-.1984	.1618	.1396	-.25	1.59	-.0491	.66	1.27
72	.07	2.87	-.6426	.00	2.63	-.7179	-.0617	.0526	.0499	-.23	1.76	-.1809	.66	1.28

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - JULY   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 1   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP · CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N			GIVEN X	GIVEN Y
	.79	4.40	-.0129	2.73	3.31	930			.84	2.84

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.08	2.95	-.3333	.02	3.06	-.4711	.1423	-.0177	-.0785	.28	4.15	-.0406	1.31	2.92
24	.13	3.46	-.3899	.03	3.37	-.5200	.1202	-.0180	-.0729	.34	4.05	-.0428	1.31	2.82
36	.16	4.45	-.5008	.03	4.06	-.6222	.1328	-.0646	-.0759	.42	3.81	-.0755	1.30	2.59
48	.17	4.95	-.5580	.04	4.26	-.6523	.1325	-.0789	-.0654	.48	3.65	-.0817	1.31	2.51
60	.18	5.51	-.6211	.04	4.51	-.6915	.1004	-.0649	-.0508	.49	3.45	-.0800	1.31	2.39
72	.16	5.74	-.6475	.04	4.49	-.6865	.0707	-.0440	-.0289	.49	3.35	-.0538	1.31	2.41

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 2
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	1.18	4.45	.0981	1.85	3.45	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.06	3.18	-.3454	.01	3.16	-.4649	.0536	.0262	-.0543
24	.12	3.67	-.4018	.04	3.53	-.5204	.1502	-.0099	-.1109
36	.15	4.58	-.5054	.06	4.25	-.6228	.1617	-.0912	-.0861
48	.18	5.03	-.5567	.08	4.38	-.6403	.1836	-.1250	-.0869
60	.19	5.53	-.6130	.09	4.67	-.6823	.1460	-.1149	-.0663
72	.19	5.75	-.6393	.11	4.71	-.6861	.1436	-.1155	-.0637

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	1.39	1.95

	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
	.44	4.17	.1091	.9:	3.05
	.44	4.07	.0865	.94	2.94
	.56	3.84	.0730	.90	2.70
	.61	3.70	.0600	.90	2.65
	.62	3.51	.0753	.90	2.52
	.63	3.42	.0779	.91	2.51

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 3
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.35	4.59	.1239	1.62	3.51	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.58	1.66

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.06	3.04	-.3203	.03	2.95	-.4253	.0970	.0238	-.0834	.49	4.34	.1276	.89	3.17
24	.12	3.76	-.4015	.06	3.57	-.5131	.1580	-.0365	-.1053	.56	4.20	.1115	.86	3.01
36	.16	4.65	-.5003	.08	4.28	-.6146	.1505	-.0946	-.0884	.63	3.98	.1076	.83	2.77
48	.20	5.09	-.5501	.10	4.53	-.6501	.1583	-.1107	-.0836	.67	3.84	.1029	.82	2.67
60	.20	5.52	-.5976	.12	4.77	-.6875	.1668	-.1274	-.0883	.68	3.68	.0955	.83	2.55
72	.19	5.78	-.6289	.15	4.81	-.6965	.1632	-.1276	-.0821	.69	3.57	.1039	.84	2.52

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 4
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	1.36	4.79	.1173	1.45	3.77	930		1.56	1.43

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XF,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.07	3.11	-.3243	.04	3.13	-.4275	.0617	.0507	-.0936	.46	4.52	.1200	.87	3.39
24	.12	3.93	-.4168	.05	3.76	-.5061	.1301	-.0041	-.1191	.52	4.34	.1054	.83	3.24
36	.16	4.74	-.5042	.09	4.46	-.6021	.1294	-.0361	-.1136	.58	4.13	.1015	.81	3.00
48	.19	5.26	-.5591	.09	4.83	-.6510	.1306	-.0742	-.0899	.64	3.97	.1031	.78	2.86
60	.20	5.68	-.6032	.11	5.13	-.6947	.1356	-.1034	-.0777	.67	3.82	.1008	.77	2.71
72	.20	5.94	-.6309	.13	5.21	-.7087	.1261	-.1131	-.0553	.69	3.71	.1153	.77	2.66

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JULY
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 5
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
1.16	4.86	.0779	1.10	3.86	930	1.33	.99

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.05	3.25	-.3260	.03	3.31	-.4339	.0782	.0499	-.0900	.46	4.58	.0778	.73	3.46
24	.10	3.95	-.4091	.03	3.79	-.4994	.0994	.0232	-.1018	.48	4.42	.0718	.69	3.33
36	.13	4.89	-.5073	.06	4.56	-.5985	.1184	-.0246	-.0979	.53	4.18	.0619	.66	3.08
48	.16	5.31	-.5539	.05	4.91	-.6453	.1109	-.0626	-.0633	.57	4.05	.0662	.63	2.95
60	.17	5.84	-.6076	.06	5.26	-.6927	.1035	-.0929	-.0363	.60	3.86	.0697	.61	2.78
72	.16	6.09	-.6302	.08	5.34	-.7054	.0969	-.1008	-.0178	.61	3.77	.0816	.61	2.73

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 6
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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| | QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | • | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP | | | | |

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	.81	4.93	.0539	.76	4.14	930		.85	.61

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.04	3.45	-.3476	.01	3.66	-.4441	.0571	.0725	-.0965	•	.35	4.61	.0536	.55	3.69
24	.07	4.21	-.4311	-.01	4.12	-.5063	.0642	.0384	-.0872	•	.38	4.44	.0517	.49	3.56
36	.09	5.12	-.5256	.02	4.94	-.6052	.0781	-.0084	-.0688	•	.41	4.19	.0482	.48	3.29
48	.13	5.54	-.5710	.01	5.30	-.6509	.0649	-.0398	-.0331	•	.45	4.05	.0541	.45	3.14
60	.14	5.95	-.6084	.01	5.59	-.6884	.0721	-.0742	-.0127	•	.47	3.91	.0524	.44	3.00
72	.12	6.19	-.6288	.01	5.69	-.7018	.0644	-.0737	-.0005	•	.47	3.83	.0642	.44	2.95

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDF (KM)   - 7
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.28	5.01	.0897	.37	4.36	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.37	.22

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.04	3.49	-.3513	-.01	3.63	-.4224	-.0003	.0524	-.0786	.09	4.68	.1057	.29	3.93
24	.06	4.28	-.4350	-.02	4.37	-.5076	.0458	.0488	-.0852	.10	4.50	.1007	.27	3.74
36	.08	5.12	-.5208	-.04	5.18	-.5977	.0460	.0192	-.0628	.12	4.28	.1120	.25	3.49
48	.09	5.66	-.5727	-.03	5.53	-.6428	.0663	-.0386	-.0425	.14	4.11	.1030	.24	3.34
60	.08	5.97	-.6000	-.03	5.87	-.6833	.0836	-.0735	-.0330	.14	4.01	.0983	.24	3.18
72	.07	6.21	-.6193	-.06	5.97	-.6954	.0655	-.0746	-.0073	.14	3.93	.1182	.22	3.13

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

```
STATION (12868)   - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD   - JULY                  Y  = V(AT T)
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     - 8                     XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE       - 90.0                  YP = V(AT T + DT) - V(AT T)
```

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X		R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y			
	-.10	5.55		.1673	-.10	4.72	930		-.06	-.24			

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.00	3.78	-.3430	-.01	3.82	-.4115	.0586	.0497	-.0911	-.05	5.20	.1820	.02	4.29
24	.01	4.78	-.4398	-.04	4.60	-.5017	.0778	.0098	-.0863	-.06	4.97	.1877	.01	4.08
36	.00	5.69	-.5344	-.05	5.35	-.5825	.0805	-.0304	-.0757	-.06	4.69	.1923	-.00	3.83
48	.01	6.16	-.5755	-.03	5.84	-.6382	.1130	-.0859	-.0684	-.07	4.54	.1838	.01	3.63
60	-.02	6.51	-.6059	-.04	6.12	-.6725	.1109	-.1004	-.0587	-.08	4.41	.1906	.01	3.49
72	-.02	6.77	-.6277	-.08	6.30	-.6900	.1250	-.1148	-.0641	-.09	4.32	.1867	-.01	3.41

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 9
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.66	6.49	.2715	-.61	5.39	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.04	-.84

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.00	4.33	-.3414	-.01	4.17	-.3921	.1401	.0071	-.1113	-.56	6.08	.2887	-.18	4.95
24	.03	5.62	-.4464	-.05	5.28	-.5038	.1540	-.0424	-.1128	-.58	5.80	.2983	-.20	4.65
36	.03	6.62	-.5347	-.06	6.18	-.5906	.1485	-.0765	-.1139	-.59	5.48	.3084	-.21	4.35
48	.01	7.18	-.5792	-.05	6.68	-.6434	.1760	-.1141	-.1277	-.61	5.28	.3027	-.20	4.13
60	-.03	7.61	-.6119	-.07	6.98	-.6735	.1920	-.1468	-.1272	-.65	5.13	.2996	-.21	3.98
72	-.05	7.91	-.6369	-.12	7.14	-.6862	.2228	-.1693	-.1534	-.65	5.00	.2779	-.24	3.92

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 10
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) .– U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.01	7.44	.3200	-1.21	6.11	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-1.09	-1.49

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.01	5.04	-.3460	-.00	4.60	-.3825	.1387	.0187	-.1171	-.31	6.96	.3474	-.53	5.62
24	-.00	6.42	-.4409	-.06	5.85	-.4905	.2055	-.0570	-.1391	-.38	6.66	.3470	-.51	5.31
36	-.03	7.66	-.5343	-.09	6.91	-.5826	.2265	-.0942	-.1718	-.39	6.27	.3499	-.51	4.96
48	-.07	8.24	-.5733	-.08	7.45	-.6284	.2497	-.1327	-.1857	-.44	6.08	.3411	-.49	4.75
60	-.13	8.94	-.6219	-.14	7.88	-.6635	.2613	-.1691	-.1873	-.49	5.82	.3388	-.51	4.57
72	-.18	9.26	-.6466	-.21	8.13	-.6813	.2994	-.2038	-.2161	-.52	5.67	.3098	-.55	4.47

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)   - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD   - JULY                  Y  = V(AT T)
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     - 11                     XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE       - 90.0                   YP = V(AT T + DT) - V(AT T)
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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP									CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-1.47	8.67	.3326	-1.92	6.80	930	-1.53	-2.24

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.08	5.92	-.3427	-.01	5.16	-.3886	.1914	.0029	-.0922	-.53	8.13	.3604	-.83	6.25
24	-.11	7.39	-.4275	-.07	6.49	-.4895	.1822	-.0494	-.1330	-.61	7.82	.3614	-.84	5.92
36	-.14	9.03	-.5308	-.10	7.75	-.5889	.2172	-.0971	-.1707	-.64	7.33	.3632	-.83	5.49
48	-.20	9.77	-.5741	-.10	8.36	-.6352	.2468	-.1260	-.1988	-.67	7.08	.3548	-.83	5.24
60	-.26	10.60	-.6269	-.15	8.93	-.6746	.2798	-.1823	-.2146	-.75	6.74	.3339	-.84	5.02
72	-.34	10.90	-.6471	-.21	9.10	-.6871	.3189	-.2130	-.2441	-.79	6.60	.3051	-.88	4.94

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 12
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-2.06	9.74	.3124	-2.84	7.43	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-2.25	-3.18

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.11	6.46	-.3304	-.01	5.49	-.3828	.0925	.0075	-.0850	-.70	9.18	.3379	-1.29	6.86
24	-.18	8.23	-.4229	-.07	6.90	-.4815	.1749	-.0215	-.1506	-.71	8.79	.3365	-1.31	6.49
36	-.23	10.17	-.5279	-.11	8.27	-.5788	.2150	-.0735	-.1869	-.79	8.24	.3346	-1.29	6.05
48	-.30	11.08	- 5770	-.12	8.97	-.6269	.2363	-.1066	-.2003	-.87	7.93	.3318	-1.28	5.78
60	-.37	11.98	-.6279	-.17	9.61	-.6683	.2792	-.1543	-.2338	-.93	7.56	.3051	-1.30	5.52
72	-.47	12.29	-.6474	-.23	9.85	-.6846	.2961	-.1739	-.2488	-.98	7.40	.2895	-1.33	5.41

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 13
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N			GIVEN X	GIVEN Y	
	-2.75	10.28	.2741	-3.99	7.84	930			-3.10	-4.48	

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.09	6.75	-.3332	-.02	5.69	-.3766	.0381	.0545	-.0902	-.61	9.66	.3028	-1.90	7.25
24	-.13	8.48	-.4216	-.07	7.16	-.4762	.1628	.0080	-.1641	-.67	9.26	.2923	-1.86	6.86
36	-.17	10.59	-.5291	-.09	8.50	-.5566	.1885	-.0303	-.1979	-.76	8.66	.2908	-1.81	6.43
48	-.23	11.63	-.5824	-.09	9.36	-.6211	.2226	-.0743	-.2135	-.90	8.31	.2813	-1.78	6.13
60	-.29	12.58	-.6319	-.12	9.94	-.6587	.2421	-.1064	-.2313	-.97	7.92	.2665	-1.78	5.89
72	-.38	12.90	-.6515	-.17	10.19	-.6762	.2616	-.1289	-.2462	-1.03	7.75	.2485	-1.79	5.77

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 14
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	-3.41	8.93	.2518	-4.52	7.09	930		-3.78	-6.01

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	5.97	-.3445	-.03	5.17	-.3763	.0081	.0760	-.0967	-.52	8.35	.2814	-1.78	6.55
24	-.09	7.19	-.4176	-.05	6.22	-.4590	.1046	.0603	-.1667	-.43	8.04	.2761	-1.72	6.26
36	-.15	9.05	-.5279	-.07	7.48	-.5493	.1587	.0176	-.2070	-.69	7.51	.2748	-1.63	5.88
48	-.20	9.99	-.5773	-.10	8.11	-.5934	.1926	-.0240	-.2189	-.88	7.23	.2661	-1.60	5.67
60	-.23	10.85	-.6338	-.12	8.69	-.6366	.2093	-.0562	-.2340	-.98	6.85	.2551	-1.56	5.44
72	-.31	11.12	-.6552	-.16	8.96	-.6552	.2309	-.0878	-.2402	-1.10	6.70	.2386	-1.56	5.34

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD - JULY	Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70	
ALTITUDE (KM) - 15	XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE - 90.0	YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•		GIVEN X	GIVEN Y		
	-4.34	6.57	.2673	-3.91	5.60	930	•		-4.89	-4.23		

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	4.54	-.3611	.00	4.59	-.4214	.0514	.0564	-.1046	•	-1.31	6.10	.2993	-2.18	5.06
24	-.08	5.21	-.4173	.01	4.64	-.4358	.1169	.0522	-.1677	•	-1.17	5.92	.2928	-2.16	5.01
36	-.09	6.59	-.5249	-.01	5.74	-.5351	.1441	.0331	-.1972	•	-1.32	5.53	.3086	-2.10	4.69
48	-.15	7.12	-.5637	.01	6.00	-.5644	.1895	-.0150	-.2084	•	-1.47	5.38	.2971	-1.97	4.60
60	-.20	7.82	-.6154	-.01	6.56	-.6151	.1874	-.0325	-.2106	•	-1.57	5.14	.3052	-1.93	4.39
72	-.26	8.09	-.6385	-.00	6.66	-.6214	.2268	-.0823	-.2135	•	-1.70	5.03	.2858	-1.85	4.38

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 16
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
	-5.07	4.80	.2954	-2.84	4.23	930	•	-6.32	-2.95

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.01	3.97	-.4235	.00	3.90	-.4648	.0391	.0562	-.0916	•	-1.58	4.33	.3567	-1.84	3.73
24	-.04	4.18	-.4458	.02	3.76	-.4527	.0865	.0836	-.1640	•	-1.45	4.25	.3508	-2.08	3.73
36	-.05	5.08	-.5437	.02	4.60	-.5526	.1251	.0423	-.1766	•	-1.59	3.99	.3737	-1.88	3.49
48	-.06	5.41	-.5753	.04	4.67	-.5712	.1938	.0005	-.2169	•	-1.65	3.89	.3536	-1.79	3.44
60	-.08	5.79	-.6128	.07	5.09	-.6224	.1986	-.0452	-.1938	•	-1.76	3.78	.3619	-1.61	3.29
72	-.11	6.07	-.6380	.07	5.07	-.6226	.2176	-.0671	-.1960	•	-1.82	3.69	.3612	-1.54	3.29

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - JULY   Y = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 17   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP |

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-6.28	3.66	.2318	-1.98	3.36	930	-6.41	-2.08

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.02	3.74	-.5100	.02	3.87	-.5742	.0097	-.0056	-.0050	-3.09	3.15	.3250	-.93	2.75
24	-.03	3.43	-.4686	.06	3.47	-.5176	.0369	.0474	-.0775	-2.97	3.23	.2962	-1.32	2.87
36	-.04	4.16	-.5669	.09	4.07	-.6046	.1103	-.0454	-.0782	-3.08	3.02	.2997	-1.00	2.68
48	-.05	4.37	-.5905	.11	3.93	-.5845	.1539	-.0564	-.1175	-3.10	2.96	.2795	-1.04	2.72
60	-.07	4.60	-.6222	.12	4.33	-.6480	.1586	-.0849	-.1034	-3.13	2.87	.2951	-.95	2.56
72	-.08	4.81	-.6556	.15	4.19	-.6319	.2006	-.1119	-.1359	-3.12	2.77	.2660	-.91	2.60

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 18
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-8.39	2.97	.0348	-1.16	2.87	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-8.37	-1.19

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.02	3.17	-.5328	.00	3.84	-.6720	-.0690	.0304	.0523	-4.24	2.51	.0981	-.44	2.12
24	-.02	2.99	-.5061	.02	3.14	-.5523	-.0714	.1445	-.0598	-4.03	2.55	.0785	-1.41	2.37
36	-.04	3.50	-.5873	.04	3.95	-.6822	-.0163	.0280	.0019	-4.22	2.40	.0779	-.67	2.09
48	-.05	3.66	-.6133	.03	3.63	-.6286	-.0025	.0525	-.0345	-4.22	2.34	.0725	-.89	2.22
50	-.09	3.78	-.6322	.04	4.03	-.7019	.0042	-.0072	.0149	-4.29	2.30	.0772	-.52	2.04
72	-.10	3.88	-.6511	.03	3.79	-.6605	-.0098	-.0021	.0313	-4.30	2.25	.0876	-.50	2.15

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 19
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-10.63	2.86	.1350	-.67	2.65	930	-10.61	-.90

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.02	3.59	-.6282	.01	3.98	-.7462	.2594	-.2289	-.1356	-5.27	2.23	.0220	-.13	1.78
24	-.07	3.06	-.5326	-.00	2.94	-.5453	-.0560	.0600	.0133	-5.36	2.42	.2228	-.70	2.22
36	-.08	3.67	-.6352	-.02	4.00	-.7398	.2522	-.1941	-.1480	-5.40	2.21	.0400	-.38	1.78
48	-.14	3.41	-.5866	-.02	3.30	-.6009	-.0127	-.0052	.0381	-5.50	2.32	.2325	-.34	2.12
60	-.14	3.90	-.6673	-.03	4.07	-.7519	.2271	-.1729	-.1389	-5.49	2.13	.0592	-.43	1.75
72	-.18	3.57	-.6058	-.03	3.33	-.6105	.0119	.0014	.0100	-5.57	2.28	.2324	-.52	2.10

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – JULY   Y = V(AT T)
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 20   XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                    •   FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-13.01	3.43	.0679	-.81	2.39	930

CONDITIONAL:

GIVEN X	GIVEN Y
-13.01	-.82

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	4.98	-.7300	.01	3.34	-.6996	.0967	-.0720	-.0618	-6.49	2.35	.0440	-.37	1.71
24	-.09	3.18	-.4646	.01	3.10	-.6408	-.0075	.0331	-.0144	-6.53	3.04	.1089	-.72	1.84
36	-.12	5.07	-.7407	-.02	3.28	-.6752	.1432	-.0980	-.0998	-6.55	2.31	-.0008	-.41	1.77
48	-.16	3.56	-.5175	-.00	3.31	-.6816	.0111	.0116	-.0128	-6.59	2.94	.1105	-.57	1.75
60	-.19	5.15	-.7539	-.00	3.45	-.7106	.1393	-.1073	-.0936	-6.57	2.26	-.0106	-.36	1.68
72	-.22	3.70	-.5406	.02	3.36	-.6925	.0369	-.0182	-.0216	-6.60	2.89	.0938	-.46	1.73

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - JULY
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 21
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-14.94	3.51	-.2009	-.52	2.72	930	-14.98	-.48

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	5.01	-.7181	-.00	4.03	-.7394	-.3695	.2534	.2898	-7.55	2.44	-.0012	-.09	1.83
24	-.07	3.48	-.4941	.03	3.35	-.6166	-.1237	.0741	.0660	-7.53	3.05	-.2355	-.24	2.14
36	-.08	5.17	-.7353	.01	4.04	-.7428	-.3696	.2521	.2971	-7.63	2.38	.0079	-.06	1.82
48	-.10	3.89	-.5504	.01	3.53	-.6490	-.0670	.0301	.0518	-7.57	2.93	-.2749	-.13	2.07
60	-.16	5.20	-.7486	.02	4.10	-.7563	-.3229	.2438	.2502	-7.49	2.33	-.0275	-.26	1.78
72	-.18	3.99	-.5793	.05	3.55	-.6605	-.0068	.0253	.0011	-7.40	2.86	-.3074	-.46	2.04

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 22
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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| | QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | • | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP | | | | |

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	-16.42	3.27	-.1696	-.30	3.13	930		-16.43	-.29

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	4.10	-.6269	-.02	5.08	-.8097	-.3061	.2235	.2166	•	-8.33	2.55	-.0203	.17	1.83
24	-.08	3.58	-.5427	-.01	3.49	-.5576	-.1334	.0596	.0766	•	-8.32	2.75	-.1936	.05	2.59
36	-.12	4.24	-.6419	-.01	5.04	-.8020	-.2907	.2268	.1873	•	-8.34	2.51	-.0512	-.08	1.87
48	-.14	3.92	-.5893	-.03	3.71	-.5961	-.0850	.0187	.0704	•	-8.43	2.64	-.2260	.25	2.51
60	-.16	4.51	-.6876	-.04	4.39	-.7960	-.2713	.2078	.1850	•	-8.30	2.38	-.0636	-.07	1.89
72	-.19	4.07	-.6158	-.03	3.74	-.5949	-.0592	.0169	.0432	•	-8.39	2.58	-.2450	.06	2.51

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – JULY   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 23   XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                    •   FOR XP AND YP
                                                    •
     MEAN   S.D.   R   MEAN   S.D.   N   •   GIVEN   GIVEN
      X   X   (X,Y)   Y   Y   •   X   Y
                                                    •
    -17.56   3.32   -.0141   -.23   3.09   930   •   -17.53   -.26
                                                    •

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.03	3.70	-.5555	.00	4.82	-.7808	-.0098	-.0016	.0184	•	-8.86	2.76	-.0094	.03	1.93
24	-.08	3.59	-.5445	.02	3.74	-.6013	-.0582	.0453	.0203	•	-3.76	2.78	.0056	-.25	2.47
36	-.11	3.91	-.5918	.00	4.94	-.7848	-.0253	-.0149	.0360	•	-8.83	2.67	-.0130	.37	1.91
48	-.14	3.84	-.5838	-.01	3.72	-.5885	-.0152	-.0120	.0196	•	-8.79	2.69	-.0226	.18	2.50
60	-.17	4.13	-.6293	-.02	4.83	-.7739	-.0064	.0161	-.0044	•	-8.78	2.58	-.0214	-.26	1.96
72	-.20	4.17	-.6415	-.02	3.79	-.6042	-.0443	.0253	.0195	•	-8.72	2.55	-.0053	-.10	2.46

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – JULY
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 24
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS
FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N			GIVEN X	GIVEN Y		
	-18.66	3.50	-.0258	-.27	2.81	930			-18.62	-.31		

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	4.06	-.5808	.02	4.11	-.7365	.0342	-.0370	-.0068	•	-9.37	2.85	-.0685	.05	1.90
24	-.09	3.91	-.5647	.04	3.59	-.6443	-.0446	-.0074	.0592	•	-9.34	2.89	-.0128	.39	2.14
36	-.14	4.18	-.6018	.02	4.13	-.7182	.0257	-.0488	.0048	•	-9.35	2.79	-.0733	.27	1.95
48	-.18	4.13	-.6014	.01	3.57	-.6232	-.0979	.0252	.0867	•	-9.32	2.79	.0108	.34	2.19
60	-.23	4.53	-.6600	-.01	4.15	-.7294	.0214	-.0375	.0070	•	-9.28	2.63	-.0686	.13	1.92
72	-.27	4.36	-.6462	-.02	3.75	-.6585	-.1050	.0633	.0710	•	-9.17	2.67	.0298	-.05	2.11

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - JULY   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 25   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   ·   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	-19.44	3.82	.0182	-.52	2.70	930		-19.40	-.58

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	4.32	-.5678	.00	3.73	-.6894	.1083	-.0658	-.0665	-9.72	3.15	-.0379	-.33	1.96
24	-.09	4.01	-.5312	-.01	3.65	-.6779	-.0119	-.0325	.0417	-9.68	3.24	.0402	.29	1.98
36	-.14	4.58	-.6084	-.02	3.82	-.6859	.0675	-.1186	.0196	-9.63	3.02	-.0221	.58	1.95
48	-.20	4.33	-.5824	-.04	3.71	-.6649	-.0542	-.0239	.0787	-9.62	3.10	.0593	.46	2.01
60	-.25	4.80	-.6474	-.04	3.87	-.6920	.0196	-.0490	.0211	-9.58	2.91	.0179	.12	1.94
72	-.31	4.58	-.6262	-.02	3.79	-.6801	-.0192	.0094	.0238	-9.48	2.98	.0562	-.21	1.98

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - JULY
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 26
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

● ●

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP									●	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	●		GIVEN X	GIVEN Y	
	-20.08	4.35	-.0864	-.60	2.98	930	●		-19.98	-.66	

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	●	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.03	4.51	-.5179	.00	3.96	-.6879	-.0929	.0652	.0512	●	-10.12	3.72	-.0813	-.29	2.09
24	-.09	4.29	-.5223	-.04	3.95	-.6837	-.1398	.0734	.0898	●	-9.62	3.71	-.0587	.01	2.10
36	-.15	5.03	-.6037	-.05	3.98	-.6800	-.1302	.0444	.1154	●	-9.83	3.46	-.0588	.21	2.11
48	-.21	4.94	-.6019	-.04	4.05	-.6960	-.1425	.0443	.1326	●	-9.76	3.47	-.0469	.35	2.06
60	-.26	5.35	-.6496	-.01	4.13	-.7100	-.1592	.0958	.1243	●	-9.74	3.31	-.0172	-.09	2.03
72	-.30	5.23	-.6373	-.01	4.19	-.7225	-.1159	.0764	.0880	●	-9.68	3.35	-.0516	-.20	1.99

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – JULY
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 27
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP | |
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-20.49	4.70	-.0384	-.80	3.09	930	-20.34	-.81

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.07	4.75	-.5119	-.01	4.07	-.6586	-.1328	.1012	.0603	-10.18	4.04	.0129	-.59	2.33
24	-.13	4.81	-.5211	-.05	4.25	-.6867	-.1083	.0455	.0809	-10.26	4.01	.0035	-.04	2.25
36	-.19	5.41	-.5841	-.06	4.45	-.7126	-.1502	.0651	.1216	-10.37	3.81	.0422	.06	2.17
48	-.21	5.40	-.5900	-.06	4.08	-.6543	-.0798	-.0117	.1024	-10.27	3.79	-.0146	.31	2.33
60	-.25	5.73	-.6279	-.04	4.42	-.7094	-.1094	.0536	.0912	-10.20	3.66	.0205	-.16	2.18
72	-.30	5.66	-.6249	-.05	4.34	-.7001	-.0646	.0479	.0422	-10.08	3.67	-.0130	-.45	2.21

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) - CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
7	1/56 - 12/70	0	90.0	-.60	2.29	-.1378	1.48	1.84	930
7	1/56 - 12/70	1	90.0	.79	4.40	-.0129	2.73	3.31	930
7	1/56 - 12/70	2	90.0	1.18	4.45	.0981	1.85	3.45	930
7	1/56 - 12/70	3	90.0	1.35	4.59	.1239	1.62	3.51	930
7	1/56 - 12/70	4	90.0	1.36	4.79	.1173	1.45	3.77	930
7	1/56 - 12/70	5	90.0	1.16	4.86	.0779	1.10	3.86	930
7	1/56 - 12/70	6	90.0	.81	4.93	.0539	.78	4.14	930
7	1/56 - 12/70	7	90.0	.28	5.01	.0897	.37	4.36	930
7	1/56 - 12/70	8	90.0	-.10	5.55	.1673	-.10	4.72	930
7	1/56 - 12/70	9	90.0	-.66	6.49	.2715	-.61	5.39	930
7	1/56 - 12/70	10	90.0	-1.01	7.44	.3200	-1.21	6.11	930
7	1/56 - 12/70	11	90.0	-1.47	8.67	.3326	-1.92	6.80	930
7	1/56 - 12/70	12	90.0	-2.06	9.74	.3124	-2.84	7.43	930
7	1/56 - 12/70	13	90.0	-2.75	10.28	.2741	-3.99	7.84	930
7	1/56 - 12/70	14	90.0	-3.41	8.93	.2518	-4.52	7.09	930
7	1/56 - 12/70	15	90.0	-4.34	6.57	.2673	-3.91	5.60	930
7	1/56 - 12/70	16	90.0	-5.07	4.80	.2954	-2.84	4.23	930
7	1/56 - 12/70	17	90.0	-6.28	3.66	.2318	-1.98	3.36	930
7	1/56 - 12/70	18	90.0	-8.39	2.97	.0348	-1.16	2.87	930
7	1/56 - 12/70	19	90.0	-10.63	2.86	.1350	-.87	2.65	930
7	1/56 - 12/70	20	90.0	-13.01	3.43	.0679	-.81	2.39	930
7	1/56 - 12/70	21	90.0	-14.94	3.51	-.2009	-.52	2.72	930
7	1/56 - 12/70	22	90.0	-16.42	3.27	-.1696	-.30	3.13	930
7	1/56 - 12/70	23	90.0	-17.56	3.32	-.0141	-.23	3.09	930
7	1/56 - 12/70	24	90.0	-18.66	3.50	-.0258	-.27	2.81	930
7	1/56 - 12/70	25	90.0	-19.44	3.82	.0182	-.52	2.70	930
7	1/56 - 12/70	26	90.0	-20.08	4.35	-.0864	-.60	2.83	930
7	1/56 - 12/70	27	90.0	-20.49	4.70	-.0364	-.80	3.09	930

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 0
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.59	2.14	.0388	.69	1.99	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.57	.66

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.01	2.67	-.6226	-.03	2.13	-.5350	-.1373	.1121	.0419	-.33	1.67	.1297	.34	1.68
24	-.02	2.22	-.5092	-.05	2.18	-.5377	-.0326	.0424	-.0118	-.33	1.84	.0623	.33	1.69
36	-.04	2.91	-.6690	-.06	2.47	-.6120	-.0746	.0631	.0348	-.33	1.59	.1221	.33	1.58
48	-.05	2.58	-.5908	-.08	2.53	-.6271	.0055	.0238	-.0276	-.34	1.73	.0599	.32	1.55
60	-.08	3.03	-.6990	-.09	2.71	-.6751	.0048	.0104	-.0176	-.35	1.53	.0691	.32	1.47
72	-.10	2.69	-.6202	-.10	2.71	-.6739	.0541	-.0050	-.0651	-.37	1.68	.0248	.30	1.47

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – AUGUST   Y = V(AT T)
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 1   XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT) – V(AT T)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
.10	4.45	.1412	2.00	3.59	930		.19	1.89

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.08	3.11	-.3572	-.03	3.04	-.4177	.1422	-.0242	-.0857	-.13	4.15	.1390	1.06	3.26
24	-.13	3.76	-.4357	-.04	3.45	-.4748	.1345	-.0441	-.0821	-.12	4.00	.1399	1.05	3.16
36	-.18	4.55	-.5230	-.08	4.16	-.5742	.1583	-.1027	-.0908	-.08	3.79	.1270	1.03	2.94
48	-.22	4.95	-.5703	-.11	4.39	-.6079	.1387	-.1141	-.0668	-.09	3.65	.1282	1.01	2.85
60	-.28	5.41	-.6211	-.13	4.78	-.6633	.1711	-.1459	-.0847	-.10	3.49	.1105	1.00	2.68
72	-.33	5.63	-.6470	-.16	4.83	-.6722	.1565	-.1511	-.0696	-.11	3.39	.1146	.98	2.65

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	- CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD	- AUGUST	Y = V(AT T)
PERIOD OF RECORD	- 1/56 - 12/70	
ALTITUDE (KM)	- 2	XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE	- 90.0	YP = V(AT T + DT) - V(AT T)

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| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | • | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP |

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
.56	4.44	.2291	1.52	3.63	930	•	.65	1.35

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.07	3.13	-.3635	-.02	2.99	-.4112	.1408	-.0161	-.0891	•	.11	4.13	.2447	.87	3.30
24	-.11	3.82	-.4431	-.03	3.41	-.4719	.2386	-.0977	-.1228	•	.13	3.98	.2249	.83	3.20
36	-.15	4.57	-.5244	-.06	4.26	-.5916	.2020	-.1227	-.1093	•	.14	3.78	.2370	.81	2.92
48	-.21	5.01	-.5717	-.10	4.48	-.6245	.2596	-.1877	-.1320	•	.14	3.64	.2059	.78	2.83
60	-.27	5.39	-.6140	-.12	4.88	-.6826	.2374	-.1959	-.1194	•	.12	3.50	.2197	.77	2.65
72	-.33	5.66	-.6443	-.15	4.93	-.6926	.2769	-.2415	-.1371	•	.11	3.39	.1847	.74	2.61

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 3
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
.78	4.68	.2294	1.39	3.72	930	.87	1.22

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	3.09	-.3393	-.01	2.92	-.3931	.1674	-.0158	-.1017	.22	4.40	.2368	.82	3.42
24	-.10	3.88	-.4266	-.02	3.58	-.4855	.2022	-.0772	-.1065	.25	4.23	.2360	.78	3.25
36	-.13	4.57	-.5029	-.03	4.31	-.5876	.1995	-.1213	-.1018	.26	4.05	.2396	.75	3.01
48	-.18	5.12	-.5628	-.06	4.64	-.6342	.2447	-.1776	-.1219	.26	3.87	.2182	.73	2.88
60	-.22	5.59	-.6107	-.09	5.00	-.6823	.2399	-.2053	-.1119	.25	3.70	.2205	.70	2.72
72	-.26	5.90	-.6431	-.12	5.08	-.6957	.2676	-.2426	-.1218	.25	3.58	.1965	.68	2.66

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 4
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.91	4.83	.2555	1.43	3.83	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.05	3.32	-.3484	-.01	3.03	-.3956	.1936	-.0290	-.1122
24	-.08	4.06	-.4245	.01	3.73	-.4933	.2067	-.0747	-.1157
36	-.10	4.63	-.4842	.00	4.45	-.5865	.2265	-.1392	-.1110
48	-.13	5.13	-.5404	.00	4.89	-.6467	.2636	-.2114	-.1151
60	-.16	5.61	-.5902	-.03	5.18	-.6852	.2901	-.2460	-.1365
72	-.21	5.98	-.6280	-.05	5.32	-.7034	.2921	-.2619	-.1399

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X		GIVEN Y	
	.99		1.32	

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.30	4.52	.2647	.81	3.51
.32	4.37	.2668	.78	3.33
.35	4.22	.2644	.75	3.10
.37	4.06	.2477	.73	2.91
.36	3.89	.2281	.72	2.78
.35	3.75	.2197	.70	2.71

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — AUGUST
PERIOD OF RECORD   — 1/56 — 12/70
ALTITUDE (KM)   — 5
ALPHA ANGLE   — 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.93	5.05	.2454	1.22	4.13	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.04	3.43	-.3458	-.01	3.39	-.4083	.0926	.0046	-.0712
24	-.08	4.09	-.4063	-.01	4.11	-.4953	.2163	-.0793	-.1123
36	-.11	4.95	-.4948	-.01	5.02	-.6087	.2130	-.1393	-.1049
48	-.13	5.43	-.5445	-.02	5.39	-.6550	.2692	-.2160	-.1206
60	-.17	5.94	-.5950	-.04	5.73	-.6973	.2774	-.2446	-.1312
72	-.20	6.29	-.6335	-.06	5.82	-.7082	.2736	-.2584	-.1287

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	1.02	1.15

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.32	4.74	.2700	.69	3.77
.34	4.62	.2533	.67	3.59
.36	4.39	.2563	.63	3.28
.36	4.24	.2283	.61	3.12
.35	4.06	.2141	.59	2.95
.34	3.90	.2071	.57	2.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - AUGUST   Y = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 6   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
.61	5.16	.2881	.82	4.37	930	.68	.68

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.03	3.63	-.3465	.01	3.35	-.3817	.1122	.0120	-.0922	.22	4.83	.3142	.53	4.03
24	-.04	4.47	-.4258	.03	4.42	-.5047	.1774	-.0402	-.1257	.23	4.66	.3149	.52	3.77
35	-.05	5.36	-.5142	.01	5.28	-.6049	.2389	-.1304	-.1480	.24	4.42	.3013	.49	3.48
48	-.07	5.85	-.5630	.01	5.74	-.6582	.2860	-.2063	-.1564	.24	4.26	.2812	.47	3.29
60	-.10	6.30	-.6094	.00	6.04	-.6938	.3080	-.2636	-.1554	.24	4.09	.2622	.46	3.14
72	-.11	6.62	-.6428	.02	6.20	-.7122	.3136	-.2872	-.1591	.24	3.94	.2486	.46	3.06

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 7
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.24	5.24	.3124	.52	4.71	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
.34	.39

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.00	3.70	-.3421	.02	3.69	-.3958	.1679	.0236	-.1220	.05	4.91	.3395	.36	4.31
24	.00	4.58	-.4255	.02	4.81	-.5118	.1644	-.0136	-.1496	.05	4.72	.3489	.35	4.03
36	-.01	5.54	-.5193	.02	5.68	-.6082	.2427	-.0958	-.1772	.06	4.47	.3419	.34	3.73
48	-.01	6.07	-.5728	.02	6.15	-.6585	.2821	-.1813	-.1697	.07	4.29	.3295	.33	3.54
60	-.02	6.52	-.6172	.03	6.40	-.6860	.3168	-.2317	-.1909	.07	4.12	.3015	.33	3.43
72	-.01	6.80	-.6467	.06	6.57	-.7051	.3317	-.2717	-.1904	.07	3.99	.2843	.31	3.33

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 8
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-.10	5.44	.2775	-.06	5.03	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.02	3.81	-.3431	.02	3.90	-.3886	.0715	.0370	-.0816
24	.03	4.86	-.4398	.03	4.97	-.4939	.1240	.0002	-.1124
36	.05	5.75	-.5203	.05	5.92	-.5926	.1752	-.0614	-.1315
48	.08	6.26	-.5680	.06	6.39	-.6415	.2196	-.1249	-.1426
60	.10	6.70	-.6060	.08	6.72	-.6754	.2647	-.1811	-.1660
72	.11	6.95	-.6315	.12	6.89	-.6935	.2919	-.2295	-.1668

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.03	-.18

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-.09	5.10	.3107	.04	4.62
-.09	4.88	.3198	.04	4.36
-.08	4.64	.3227	.05	4.04
-.07	4.48	.3091	.06	3.85
-.07	4.33	.2796	.07	3.71
-.07	4.22	.2590	.09	3.62

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 9
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						•	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
	-.35	5.88	.3071	-.47	5.61	930	•	-.22	-.56

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.02	4.10	-.3392	.02	4.15	-.3692	.0651	.0574	-.0973	-.17	5.51	.3438	-.20	5.19
24	.02	5.21	-.4328	.05	5.42	-.4838	.1480	-.0060	-.1296	-.19	5.29	.3470	-.18	4.89
35	.04	6.17	-.5097	.06	6.41	-.5763	.1698	-.0386	-.1424	-.19	5.05	.3641	-.17	4.57
49	.09	6.72	-.5603	.07	7.00	-.6320	.2199	-.1185	-.1469	-.18	4.87	.3519	-.16	4.35
60	.14	7.08	-.5911	.08	7.41	-.6694	.2563	-.1678	-.1616	-.17	4.74	.3357	-.14	4.17
72	.14	7.41	-.6198	.13	7.58	-.6888	.3061	-.2261	-.1811	-.17	4.61	.3039	-.12	4.07

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 10
ALPHA ANGLE - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-.43	6.66	.3848	-.96	6.72	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-.29	-1.05

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.03	4.87	-.3585	.00	4.92	-.3623	.1504	.0187	-.1219	-.17	6.20	.4001	-.46	6.24
24	.06	6.04	-.4499	.05	6.41	-.4745	.1943	-.0204	-.1527	-.18	5.93	.4143	-.43	5.89
36	.12	7.09	-.5225	.06	7.55	-.5615	.2135	-.0755	-.1493	-.19	5.67	.4317	-.41	5.55
48	.18	7.63	-.5657	.05	8.33	-.6227	.2564	-.1400	-.1614	-.18	5.49	.4269	-.41	5.26
60	.27	8.14	-.6063	.10	8.78	-.6571	.3020	-.2051	-.1755	-.16	5.30	.4094	-.38	5.07
72	.31	8.38	-.6246	.15	9.00	-.6766	.3329	-.2444	-.1917	-.14	5.20	.3881	-.35	4.95

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 11
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.60	7.68	.3746	-1.35	7.56	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.48	-1.41

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.09	5.67	-.3723	.01	5.27	-.3451	.1771	.0096	-.1237	-.20	7.11	.4125	-.67	7.08
24	.14	6.80	-.4438	.05	6.93	-.4548	.2124	-.0132	-.1587	-.19	6.86	.4270	-.66	6.71
36	.22	8.12	-.5246	.06	8.27	-.5443	.2250	-.0698	-.1535	-.21	6.53	.4469	-.64	6.33
48	.31	8.55	-.5591	.05	9.16	-.6042	.2585	-.1197	-.1659	-.18	6.36	.4465	-.64	6.02
60	.41	9.23	-.6064	.08	9.80	-.6470	.2974	-.1772	-.1810	-.15	6.10	.4401	-.61	5.77
72	.49	9.44	-.6207	.14	10.16	-.6733	.3247	-.2211	-.1899	-.12	6.02	.4230	-.57	5.59

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 12
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.82	8.53	.3450	-2.04	8.38	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.71	-2.08

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.12	6.12	-.3665	.00	5.64	-.3300	.1531	.0147	-.1101	-.23	7.93	.3796	-1.06	7.89
24	.19	7.31	-.4341	.05	7.43	-.4378	.1940	-.0079	-.1417	-.23	7.67	.3918	-1.04	7.51
36	.27	8.82	-.5194	.08	8.98	-.5313	.2195	-.0606	-.1501	-.26	7.29	.4072	-1.00	7.09
48	.37	9.21	-.5466	.08	10.00	-.5916	.2330	-.0871	-.1583	-.22	7.14	.4139	-1.00	6.74
60	.47	10.11	-.6026	.14	10.80	-.6391	.2704	-.1435	-.1752	-.20	6.81	.4086	-.95	6.44
72	.57	10.30	-.6162	.21	11.26	-.6693	.2940	-.1746	-.1884	-.16	6.72	.3975	-.91	6.23

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 13
ALPHA ANGLE - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
-1.01	8.75	.3332	-2.96	8.53	930		-.80	-3.05

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.11	6.03	-.3507	.02	5.57	-.3188	.1175	.0367	-.1047	-.25	8.18	.3685	-1.52	8.06
24	.17	7.10	-.4064	.06	7.14	-.4132	.1436	.0440	-.1384	-.23	7.97	.3848	-1.49	7.71
36	.24	8.83	-.5032	.10	8.87	-.5167	.2002	-.0213	-.1591	-.31	7.55	.3967	-1.43	7.27
48	.37	9.34	-.5369	.11	9.92	-.5777	.2250	-.0593	-.1652	-.30	7.37	.4016	-1.42	6.93
60	.49	10.25	-.5936	.17	10.71	-.6220	.2702	-.1176	-.1861	-.29	7.04	.3931	-1.38	6.66
72	.60	10.45	-.6100	.25	11.30	-.6567	.2754	-.1375	-.1872	-.25	6.94	.3966	-1.34	6.42

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 14
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
-1.69	7.89	.3615	-3.34	7.33	930		-1.44	-3.41

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.08	4.97	-.3147	.04	5.17	-.3453	.1506	.0432	-.1166	-.58	7.46	.3962	-1.80	6.85
24	.14	6.10	-.3811	.07	6.18	-.4155	.1572	.0476	-.1500	-.53	7.26	.4101	-1.77	6.62
36	.24	7.59	-.4729	.13	7.55	-.5080	.2221	-.0145	-.1813	-.60	6.92	.4184	-1.69	6.27
48	.37	8.25	-.5145	.14	8.36	-.5597	.2523	-.0586	-.1914	-.61	6.74	.4192	-1.67	6.04
60	.46	9.09	-.5694	.19	9.09	-.6086	.2870	-.1035	-.2104	-.61	6.47	.4210	-1.63	5.79
72	.56	9.33	-.5900	.25	9.46	-.6359	.3103	-.1347	-.2231	-.58	6.36	.4124	-1.59	5.64

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD    - AUGUST                Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 15                    XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE        - 90.0                  YP = V(AT T + DT) - V(AT T)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-2.65	6.23	.3338	-2.59	5.23	930	-2.42	-2.53

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.06	4.27	-.3392	.03	4.01	-.3772	.0100	.0525	-.0376	-1.29	5.85	.3897	-1.50	4.84
24	.12	4.73	-.3757	.06	4.30	-.4011	.0206	.0701	-.0641	-1.19	5.76	.3996	-1.54	4.78
36	.19	5.95	-.4671	.09	5.25	-.4903	.0904	.0034	-.0748	-1.28	5.50	.4190	-1.42	4.55
48	.30	6.41	-.4999	.11	5.62	-.5279	.1122	-.0016	-.0956	-1.23	5.39	.4255	-1.41	4.44
60	.39	7.08	-.5539	.13	6.21	-.5829	.1601	-.0344	-.1295	-1.19	5.18	.4312	-1.38	4.24
72	.49	7.33	-.5814	.16	6.40	-.6047	.1831	-.0489	-.1578	-1.10	5.05	.4246	-1.37	4.16

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 16
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-3.89	4.52	.3323	-1.75	3.86	930	-3.66	-1.60

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.04	3.63	-.3922	.02	3.68	-.4690	.0719	.0122	-.0507	-2.04	4.16	.4025	-1.13	3.40
24	.09	3.68	-.3985	.02	3.45	-.4244	.0285	.0679	-.0632	-1.95	4.14	.4084	-1.29	3.48
36	.14	4 59	-.4947	.06	4.32	-.5361	.0886	.0160	-.0738	-1.99	3.93	.4432	-1.15	3.24
48	.20	4.87	-.5264	.06	4.38	-.5441	.1026	-.0074	-.0695	-1.98	3.85	.4493	-1.10	3.23
60	.25	5.34	-.5739	.07	4.73	-.5889	.1673	-.0464	-.1161	-1.97	3.70	.4449	-1.09	3.11
72	.32	5.50	-.5939	.08	4.80	-.6009	.1643	-.0722	-.1040	-1.94	3.64	.4443	-1.01	3.08

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 17
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-5.86	3.61	.2055	-1.17	3.14	930	-5.67	-.97

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.05	3.42	-.4682	.00	3.60	-.5689	-.1233	.0672	.0722	-3.06	3.19	.3374	-.67	2.59
24	.09	3.25	-.4332	-.01	3.26	-.5122	-.0267	.0732	.0070	-3.05	3.25	.2883	-1.02	2.69
36	.12	3.84	-.5071	.00	3.77	-.5940	-.0031	.0294	.0070	-3.10	3.11	.3227	-.82	2.53
48	.16	3.91	-.5186	.01	3.80	-.5978	.0632	.0097	-.0459	-3.06	3.09	.2963	-.90	2.52
60	.22	4.35	-.5666	.03	4.01	-.6343	.0739	-.0520	-.0110	-3.11	2.97	.3073	-.65	2.43
72	.24	4.38	-.5701	.02	4.10	-.6456	.0744	-.0419	-.0242	-3.09	2.97	.3083	-.70	2.40

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 18
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-8.08	3.04	.0699	-.80	2.83	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-7.90	-.63

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.04	3.07	-.5045	-.02	3.90	-.6860	-.1373	.0787	.0809	-4.13	2.62	.1872	-.38	2.06
24	.07	2.77	-.4418	-.01	3.16	-.5502	-.0297	.0894	-.0368	-4.18	2.72	.1101	-1.09	2.35
36	.12	3.32	-.5252	-.02	3.94	-.6968	-.0899	.0822	.0429	-4.22	2.59	.1803	-.63	2.03
48	.17	3.28	-.5126	.01	3.50	-.6192	.0023	.0610	-.0417	-4.22	2.61	.1133	-.92	2.21
60	.23	3.61	-.5636	.01	4.01	-.7091	-.0460	.0516	.0208	-4.22	2.51	.1637	-.60	1.99
72	.27	3.64	-.5655	.04	3.63	-.6471	.0391	.0284	-.0633	-4.21	2.50	.0945	-.80	2.15

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 19
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X.Y)	MEAN Y	S.D. Y	N
-10.58	3.07	.1785	-.64	2.58	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-10.45	-.56

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.C. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.03	3.58	-.5745	-.03	3.87	-.7500	.2358	-.2049	-.1215	-5.39	2.52	.1316	-.15	1.70
24	.08	2.89	-.4601	-.00	2.93	-.5708	-.0375	.0617	-.0342	-5.37	2.72	.2442	-.74	2.11
36	.12	3.79	-.6067	.02	3.91	-.7670	.2291	-.1649	-.1623	-5.42	2.44	.1187	-.43	1.65
48	.19	3.17	-.5045	.03	3.16	-.6279	-.0052	.0271	-.0390	-5.35	2.65	.2474	-.54	2.01
60	.22	3.91	-.6277	.03	3.86	-.7642	.2325	-.1670	-.1761	-5.37	2.39	.1007	-.42	1.66
72	.27	3.48	-.5568	.04	3.19	-.6373	.0231	-.0193	-.0435	-5.30	2.55	.2316	-.30	1.99

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (:M)   - 20
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-13.06	3.39	.1099	-.44	2.34	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.03	4.62	-.6749	.02	3.25	-.6886	.1327	-.1167	-.0653
24	.09	3.27	-.4778	.03	2.93	-.6265	-.0081	.0356	-.0273
36	.11	4.71	-.6902	.05	3.36	-.7259	.1370	-.1056	-.0951
48	.16	3.62	-.5312	.06	3.20	-.6955	.0108	.0007	-.0227
60	.20	4.83	-.7045	.06	3.42	-.7448	.1571	-.1224	-.1146
72	.25	3.85	-.5616	.05	3.18	-.6964	.0409	-.0282	-.0328

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-12.96	-.43

	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
	-6.61	2.50	.0893	-.05	1.70
	-6.57	2.98	.1571	-.50	1.83
	-6.56	2.45	.0736	-.16	1.61
	-6.52	2.87	.1617	-.27	1.68
	-6.55	2.41	.0438	-.16	1.56
	-6.52	2.80	.1469	-.20	1.68

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 21
ALPHA ANGLE - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-14.90	3.45	-.0273	-.31	2.41	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.02	4.67	-.6754	.03	3.54	-.7292	-.1566	.1181	.1015
24	.09	3.31	-.4823	.02	3.10	-.6399	.0418	-.0501	-.0035
36	.09	4.70	-.6840	.03	3.54	-.7345	-.1520	.1018	.1103
48	.15	3.63	-.5333	.05	3.29	-.6843	.0234	-.0143	-.0183
60	.19	4.75	-.6898	.04	3.56	-.7400	-.1514	.1046	.0995
72	.25	3.82	-.5549	.04	3.25	-.6760	.0242	.0024	-.0374

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-14.78	-.27

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-7.50	2.54	.0980	-.19	1.65
-7.41	3.02	-.0607	.09	1.85
-7.45	2.52	.0950	-.08	1.84
-7.32	2.92	-.0630	-.17	1.76
-7.38	2.50	.0846	-.10	1.62
-7.37	2.87	-.0688	-.33	1.78

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 22
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-16.38	3.37	-.1259	-.22	2.67	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.04	4.15	-.6127	.03	4.13	-.7797	-.3510	.2566	.2249
24	.11	3.38	-.5008	.02	3.02	-.5757	-.0385	-.0087	.0510
36	.15	4.22	-.6265	.03	4.05	-.7752	-.2870	.1938	.2072
48	.21	3.78	-.5599	.06	3.24	-.6147	-.0286	-.0041	.0482
60	.26	4.32	-.6342	.08	4.07	-.7763	-.2698	.1885	.1937
72	.33	4.02	-.5899	.08	3.26	-.6296	-.0541	.0379	.0352

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-16.28	-.18

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-8.32	2.66	.0790	.09	1.67
-8.21	2.91	-.1585	.28	2.18
-8.29	2.62	.0347	.21	1.68
-8.17	2.79	-.1661	.15	2.10
-8.28	2.60	.0233	.14	1.68
-8.18	2.72	-.1618	-.13	2.07

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 23
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-17.36	3.38	.0228	-.16	2.91	930	-17.29	-.08

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.06	3.63	-.5390	.00	4.42	-.7533	-.1048	.0584	.0625	-8.69	2.84	.1063	.17	1.91
24	.11	3.63	-.5405	-.02	3.37	-.5749	.0372	-.0379	-.0102	-8.63	2.84	.0117	.10	2.38
36	.15	3.87	-.5769	.01	4.39	-.7658	-.0364	.0059	.0371	-8.60	2.76	.0735	.17	1.87
48	.20	3.97	-.5893	.01	3.53	-.6203	.0148	-.0123	-.0037	-8.60	2.73	.0295	-.07	2.28
60	.26	4.08	-.6034	.04	4.40	-.7675	-.0287	.0162	.0182	-8.61	2.69	.0650	-.03	1.86
72	.30	4.19	-.6132	.03	3.59	-.6293	.0399	-.0165	-.0285	-8.68	2.67	.0165	-.21	2.26

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 24
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-18.35	3.64	.0405	-.17	2.80	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.08	4.10	-.5586	-.01	4.13	-.7278	.0742	-.0752	-.0332
24	.14	4.05	-.5504	-.03	3.52	-.6162	-.0265	-.0022	.0269
36	.21	4.28	-.5836	-.01	4.12	-.7484	.0643	-.0480	-.0346
48	.27	4.34	-.5867	-.02	3.53	-.6442	-.0159	.0156	.0077
60	.33	4.59	-.6205	-.01	4.10	-.7433	.0718	-.0409	-.0622
72	.39	4.51	-.6041	-.01	3.63	-.6655	-.0066	-.0048	.0068

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-18.21	-.13

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-9.26	3.02	.0079	.16	1.92
-9.29	3.04	.0714	.12	2.21
-9.21	2.96	.0273	-.11	1.86
-9.26	2.95	.0786	-.18	2.14
-9.24	2.85	.0040	-.25	1.87
-9.27	2.90	.0664	-.00	2.09

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – AUGUST
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 25
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-19.22	3.82	-.0303	-.36	2.76	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.07	4.42	-.5745	-.02	3.92	-.7058	.0645	-.0501	-.0352
24	.12	4.39	-.5664	-.01	3.62	-.6451	-.0301	-.0065	.0390
36	.16	4.73	-.6126	.00	3.89	-.7161	.0216	-.0305	.0029
48	.21	4.66	-.5978	.01	3.66	-.6755	-.0550	.0067	.0609
60	.27	5.02	-.6452	.03	3.95	-.7312	.0115	-.0165	-.0033
72	.33	4.90	-.6244	.02	3.74	-.6956	-.0617	.0268	.0496

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-19.11	-.35

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-9.70	3.13	-.0995	-.14	1.96
-9.75	3.15	-.0314	.12	2.11
-9.67	3.02	-.0678	-.02	1.93
-9.77	3.06	-.0124	.17	2.03
-9.70	2.92	-.0728	-.08	1.88
-9.76	2.98	-.0104	.00	1.98

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - AUGUST
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 26
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-19.75	4.16	-.0616	-.72	2.78	930	-19.56	-.78

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.03	4.70	-.5607	-.01	3.72	-.6713	-.0452	.0694	-.0070	-9.97	3.45	-.0724	-.79	2.06
24	.09	4.61	-.5429	.01	3.70	-.6697	-.0393	.0140	.0307	-10.12	3.50	-.0765	-.18	2.06
36	.14	5.13	-.6090	.01	3.87	-.7037	-.0225	.0220	.0072	-10.00	3.30	-.0937	-.39	1.97
48	.20	4.86	-.5683	.01	3.67	-.6649	-.0348	.0346	.0054	-10.12	3.43	-.0839	-.46	2.07
60	.25	5.45	-.6406	-.00	3.94	-.7140	-.0937	.0799	.0472	-10.03	3.20	-.0365	-.46	1.94
72	.32	5.12	-.5916	.00	3.96	-.7162	-.1028	.0603	.0769	-10.23	3.36	-.0256	-.18	1.94

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — AUGUST
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM)   — 27
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	-20.45	4.40	-.0251	-1.09	2.94	930		-20.29	-1.10

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.04	4.90	-.5501	.02	3.91	-.6618	-.0513	.0777	-.0186	-10.30	3.67	-.0213	-1.07	2.20
24	.10	4.89	-.5476	.04	4.00	-.6734	.0220	-.0216	-.0219	-10.41	3.68	-.0705	-.44	2.17
36	.13	5.37	-.6037	.07	4.20	-.7139	-.0445	-.0012	.0465	-10.39	3.50	-.0212	-.13	2.05
48	.14	5.10	-.5705	.06	3.83	-.6529	-.0230	.0081	.0053	-10.38	3.61	-.0413	-.42	2.22
60	.18	5.64	-.6277	.06	3.96	-.6692	-.0950	.0849	.0320	-10.36	3.42	.0168	-.74	2.18
72	.26	5.49	-.5979	.07	3.94	-.6594	.0006	-.0021	-.0068	-10.61	3.53	-.0508	-.49	2.21

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) — CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8	1/56 - 12/70	0	90.0	-.58	2.14	.0388	.69	1.99	930
8	1/56 - 12/70	1	90.0	.10	4.45	.1412	2.00	3.59	930
8	1/56 - 12/70	2	90.0	.56	4.44	.2291	1.52	3.63	930
8	1/56 - 12/70	3	90.0	.78	4.68	.2294	1.39	3.72	930
8	1/56 - 12/70	4	90.0	.91	4.83	.2555	1.43	3.83	930
8	1/56 - 12/70	5	90.0	.93	5.05	.2454	1.22	4.13	930
8	1/56 - 12/70	6	90.0	.61	5.16	.2881	.82	4.37	930
8	1/56 - 12/70	7	90.0	.24	5.24	.3124	.52	4.71	930
8	1/56 - 12/70	8	90.0	-.10	5.44	.2775	-.06	5.03	930
8	1/56 - 12/70	9	90.0	-.35	5.88	.3071	-.47	5.61	930
8	1/56 - 12/70	10	90.0	-.43	6.66	.3648	-.96	6.72	930
8	1/56 - 12/70	11	90.0	-.60	7.68	.3746	-1.35	7.56	930
8	1/56 - 12/70	12	90.0	-.82	8.53	.3450	-2.04	8.38	930
8	1/56 - 12/70	13	90.0	-1.01	8.75	.3332	-2.96	8.53	930
8	1/56 - 12/70	14	90.0	-1.69	7.89	.3615	-3.34	7.33	930
8	1/56 - 12/70	15	90.0	-2.65	6.23	.3329	-2.59	5.23	930
8	1/56 - 12/70	16	90.0	-3.89	4.52	.3323	-1.75	3.86	930
8	1/56 - 12/70	17	90.0	-5.86	3.61	.2055	-1.17	3.14	930
8	1/56 - 12/70	18	90.0	-8.08	3.04	.0699	-.80	2.83	930
8	1/56 - 12/70	19	90.0	-10.58	3.07	.1785	-.64	2.58	930
8	1/56 - 12/70	20	90.0	-13.06	3.39	.1099	-.44	2.34	930
8	1/56 - 12/70	21	90.0	-14.90	3.45	-.0273	-.31	2.41	930
8	1/56 - 12/70	22	90.0	-16.38	3.37	-.1259	-.22	2.67	930
8	1/56 - 12/70	23	90.0	-17.36	3.38	.0228	-.16	2.91	930
8	1/56 - 12/70	24	90.0	-18.35	3.64	.0405	-.17	2.80	930
8	1/56 - 12/70	25	90.0	-19.22	3.82	-.0303	-.36	2.76	930
8	1/56 - 12/70	26	90.0	-19.75	4.16	-.0616	-.72	2.78	930
8	1/56 - 12/70	27	90.0	-20.45	4.40	-.0251	-1.09	2.94	930

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 0
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.59	2.77	.2344	-.24	2.70	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-1.63	-.28

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.01	2.71	-.4885	-.01	2.47	-.4553	.0597	.0117	-.0656	-.78	2.42	.2882	-.17	2.40
24	-.02	2.87	-.5131	-.02	2.77	-.5062	.1352	-.0179	-.1144	-.79	2.37	.2752	-.19	2.32
36	-.03	3.53	-.6378	-.03	3.27	-.5965	.1641	-.0696	-.1314	-.79	2.13	.2817	-.15	2.17
48	-.04	3.53	-.6331	-.04	3.44	-.6250	.1755	-.0803	-.1360	-.80	2.15	.2782	-.16	2.11
60	-.04	3.93	-.7067	-.05	3.61	-.6548	.2017	-.1187	-.1527	-.80	1.96	.2689	-.14	2.04
72	-.05	3.73	-.6553	-.05	3.71	-.6717	.1845	-.1227	-.1226	-.81	2.07	.2764	-.13	2.00

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - SEPTEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/55 - 12/70
ALTITUDE (KM)   - 1   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						•	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP		
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
	-2.26	5.65	.2675	.40	4.93	900	•	-2.06	.40

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.00	3.78	-.3332	-.02	3.88	-.3923	.0998	.0594	-.1043	•	-1.31	5.31	.2994	-.07	4.51
24	-.02	4.95	-.4395	-.01	4.86	-.4856	.1381	.0191	-.1323	•	-1.30	5.06	.3083	.01	4.29
36	.01	6.08	-.5395	.01	5.81	-.5790	.2188	-.0533	-.1760	•	-1.28	4.75	.2996	.07	4.00
48	-.01	6.75	-.5998	.02	6.10	-.6049	.2336	-.0815	-.1894	•	-1.28	4.51	.2976	.11	3.91
60	.00	7.25	-.6436	.01	6.59	-.6517	.2604	-.1354	-.1935	•	-1.25	4.32	.2818	.15	3.73
72	-.01	7.54	-.6658	.03	6.72	-.6596	.2848	-.1853	-.1875	•	-1.24	4.22	.2595	.21	3.70

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD   — SEPTEMBER
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 2
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) — U(AT T)
YP = V(AT T + DT) — V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-.93	5.99	.2796	.42	4.77	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-.88	.49

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.02	3.96	-.3277	.00	3.76	-.3896	.0280	.0690	-.0707	-.54	5.64	.3215	.10	4.37
24	.03	5.16	-.4284	.03	4.77	-.4903	.1246	.0093	-.1094	-.52	5.40	.3263	.14	4.14
36	.07	6.18	-.5148	.06	5.67	-.5794	.1900	-.0618	-.1352	-.48	5.13	.3232	.17	3.88
48	.09	6.79	-.5696	.10	5.93	-.6012	.2284	-.0947	-.1683	-.47	4.91	.3088	.20	3.80
60	.11	7.25	-.6070	.10	6.34	-.6413	.2391	-.1355	-.1599	-.44	4.76	.3082	.22	3.66
72	.13	7.63	-.3361	.11	6.52	-.6557	.2610	-.1679	-.1680	-.43	4.62	.2943	.24	3.60

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 3
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						•	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
-.01	6.01	.2608	.52	4.63	900	•	.25	.61

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.03	3.95	-.3283	.02	3.68	-.3918	.0037	.0528	-.0420	•	-.16	5.67	.3025	.25	4.26
24	.04	5.08	-.4221	.05	4.68	-.4925	.0713	.0275	-.0796	•	-.15	5.44	.3154	.26	4.02
36	.06	6.04	-.5029	.08	5.50	-.5735	.1253	-.0128	-.1130	•	-.14	5.18	.3197	.27	3.79
48	.07	6.71	-.5606	.10	5.82	-.6037	.1547	-.0351	-.1402	•	-.13	4.96	.3172	.28	3.68
60	.08	7.17	-.5989	.13	6.09	-.6271	.1897	-.0870	-.1458	•	-.11	4.81	.3024	.30	3.61
72	.10	7.48	-.6226	.14	6.34	-.6506	.2024	-.1122	-.1491	•	-.10	4.70	.2961	.30	3.52

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 4
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.59	6.01	.2804	.56	4.62	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.05	3.95	-.3253	.05	3.47	-.3629	.0341	.0290	-.0354
24	.09	5.17	-.4277	.07	4.52	-.4713	.0879	.0019	-.0664
36	.10	6.10	-.5067	.10	5.40	-.5613	.1397	-.0286	-.1099
48	.11	6.64	-.5518	.12	5.76	-.5947	.1639	-.0488	-.1327
60	.13	7.08	-.5877	.14	5.08	-.6215	.1985	-.1019	-.1387
72	.16	7.26	-.6030	.15	6.30	-.6429	.2204	-.1250	-.1509

CONDITIONAL BIVARIATE NORMAL STATISTICS
FOR XP AND YP

	GIVEN X	GIVEN Y
	.81	.62

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.19	5.68	.3193	.32	4.30
.22	5.43	.3361	.32	4.07
.22	5.17	.3421	.34	3.81
.23	5.00	.3411	.35	3.70
.24	4.86	.3264	.35	3.62
.26	4.79	.3167	.35	3.54

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12866) – CAPE KENNEDY
MONTH OF RECORD – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 5
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.89	6.21	.3041	.39	4.89	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.06	3.86	-.3036	.06	3.75	-.3711	-.0044	.0634	-.0389
24	.13	5.17	-.4105	.10	4.67	-.4592	.1139	.0065	-.0920
36	.16	6.19	-.4914	.14	5.63	-.5503	.1318	-.0259	-.1072
48	.19	6.74	-.5351	.16	6.14	-.5983	.1762	-.0651	-.1343
60	.22	7.17	-.5701	.20	6.46	-.6204	.2209	-.1224	-.1492
72	.27	7.38	-.5886	.21	6.70	-.6406	.2631	-.1652	-.1744

CONDITIONAL BIVARIATE NORMAL STATISTICS
FOR XP AND YP

	GIVEN X	GIVEN Y
	1.06	.42

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.38	5.91	.3497	.29	4.53
.42	5.65	.3540	.28	4.33
.44	5.40	.3693	.28	4.07
.45	5.24	.3529	.29	3.91
.47	5.10	.3414	.29	3.83
.50	5.02	.3168	.29	3.75

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12859)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 6
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
1.10	6.44	.3035	.20	5.28	900	1.23	.20

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.07	3.83	-.2963	.05	3.76	-.3445	.0453	.0723	-.0850	.51	6.14	.3374	.27	4.94
24	.13	5.13	-.3959	.11	4.97	-.4529	.1023	.0539	-.1181	.56	5.90	.3564	.27	4.68
36	.17	6.20	-.4772	.18	5.90	-.5360	.1216	.0271	-.1345	.59	5.64	.3738	.27	4.43
48	.21	6.84	-.5266	.21	6.47	-.5942	.1587	-.0171	-.1495	.61	5.46	.3727	.27	4.27
60	.26	7.27	-.5618	.24	6.88	-.6153	.1030	-.0683	-.1460	.63	5.32	.3664	.25	4.16
72	.30	7.53	-.5831	.24	7.13	-.6347	.2355	-.1295	-.1576	.65	5.23	.3426	.23	4.08

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12859) – CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD – SEPTEMBER	Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70	
ALTITUDE (KM) – 7	XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE – 90.0	YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.54	6.94	.3467	.23	5.76	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
1.60	.24

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.06	4.13	-.2919	.07	3.91	-.3231	.0190	.0929	-.0909	.76	6.61	.3860	.36	5.42
24	.14	5.37	-.3802	.15	5.21	-.4349	.1085	.0545	-.1257	.83	6.39	.4002	.35	5.15
36	.20	6.51	-.4609	.22	6.15	-.5147	.1556	.0054	-.1498	.87	6.14	.4083	.33	4.91
48	.25	7.30	-.5193	.23	6.76	-.5626	.1793	-.0284	-.1656	.89	5.91	.4139	.31	4.74
60	.32	7.80	-.5555	.26	7.17	-.5917	.2120	-.0769	-.1725	.92	5.76	.4060	.29	4.63
72	.38	8.07	-.5749	.25	7.48	-.6102	.2337	-.1211	-.1668	.94	5.67	.3970	.26	4.56

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - SEPTEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 8
ALPHA ANGLE   - 30.0

X = U(AT T)
Y = V(AT T)
XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2.20	7.56	.3835	.11	6.33	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
2.19	.11

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.09	4.34	-.2768	.09	4.36	-.3294	.0353	.1077	-.0909	1.20	7.24	.4307	.46	5.93
24	.19	5.66	-.3606	.17	5.67	-.4316	.1126	.0684	-.1185	1.27	7.03	.4494	.40	5.66
36	.29	6.82	-.4323	.24	6.70	-.5100	.1713	.0126	-.1440	1.33	6.79	.4585	.36	5.40
48	.36	7.67	-.4895	.25	7.33	-.5553	.1816	-.0144	-.1533	1.35	6.57	.4723	.31	5.23
60	.43	8.17	-.5236	.27	7.80	-.5932	.2001	-.0620	-.1489	1.37	6.43	.4710	.26	5.13
72	.50	8.51	-.5459	.26	8.07	-.5949	.2267	-.1111	-.1468	1.39	6.33	.4593	.21	5.08

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - SEPTEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 9   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                                              FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
3.10	8.17	.3868	.10	7.00	900		3.13	.10

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.10	4.71	-.2853	.08	4.89	-.3384	.0886	.0719	-.1023	•	1.64	7.81	.4258	.55	6.55
24	.25	6.08	-.3655	.18	6.15	-.4185	.1276	.0494	-.1218	•	1.73	7.58	.4449	.49	6.32
36	.38	7.31	-.4344	.27	7.28	-.4965	.1445	.0159	-.1275	•	1.81	7.34	.4650	.42	6.04
48	.46	8.16	-.4855	.30	7.93	-.5397	.1515	-.0083	-.1304	•	1.84	7.13	.4804	.37	5.87
60	.53	8.77	-.5239	.33	8.48	-.5724	.1849	-.0643	-.1335	•	1.86	6.96	.4762	.30	5.73
72	.65	9.18	-.5504	.33	8.83	-.5686	.2043	-.1079	-.1288	•	1.90	6.82	.4709	.23	5.66

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 10
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.99	9.06	.3811	-.14	8.01	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.08	-.22

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.11	5.20	-.2979	.07	5.47	-.3254	.0619	.0796	-.1105	2.08	8.64	.4165	.62	7.53
24	.27	6.82	-.3708	.14	7.04	-.4147	.0797	.0688	-.1301	2.20	8.37	.4361	.49	7.24
36	.39	8.26	-.4445	.24	8.39	-.4973	.0854	.0504	-.1285	2.27	8.08	.4654	.42	6.91
48	.51	9.21	-.4949	.29	9.15	-.5416	.1173	.0085	-.1375	2.33	7.84	.4713	.33	6.71
60	.58	9.96	-.5299	.32	9.73	-.5768	.1530	-.0503	-.1367	2.34	7.67	.4664	.23	6.53
72	.70	10.27	-.5537	.34	10.09	-.5929	.1770	-.1075	-.1228	2.36	7.54	.4578	.12	6.45

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X. Y, XP, YP

STATION (12868)   — CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   — SEPTEMBER   Y = V(AT T)
PERIOD OF RECORD   — 1/56 — 12/70
ALTITUDE (KM)   — 11   XP = U(AT T + DT) — U(AT T)
ALPHA ANGLE   — 90.0   YP = V(AT T + DT) — V(AT T)

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| | QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | • | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP | | | | |

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
4.85	10.03	.3785	−.49	9.02	900	•	4.82	−.83

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.12	5.62	−.2795	.05	5.88	−.3097	.0566	.0417	−.0808	•	2.64	9.60	.4069	.38	8.56
24	.31	7.37	−.3657	.13	7.94	−.4206	.0944	.0380	−.1198	•	2.76	9.29	.4249	.41	8.15
36	.42	8.95	−.4390	.21	9.43	−.5016	.1049	.0191	−.1236	•	2.82	8.97	.4502	.34	7.78
48	.54	10.10	−.4944	.28	10.27	−.5447	.1356	−.0131	−.1408	•	2.89	8.68	.4574	.28	7.54
60	.62	10.93	−.5353	.34	10.90	−.5793	.1617	−.0600	−.1418	•	2.89	8.45	.4576	.19	7.34
72	.78	11.45	−.5642	.35	11.28	−.5930	.1728	−.1041	−.1250	•	2.90	8.27	.4567	.06	7.26

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X Y, XP, YP

STATION (12869) – CAPE KENNEDY
MONTH OF RECORD – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 12
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.85	10.63	.3403	-1.09	9.93	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
5.98	-1.22

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.15	5.73	-.2646	.05	6.18	-.3013	.0451	.0610	-.0933	3.20	10.22	.3631	.29	9.44
24	.34	7.52	-.3500	.11	8.50	-.4153	.0783	.0511	-.1191	3.27	9.91	.3784	.19	9.00
36	.47	9.28	-.4287	.16	10.24	-.5021	.1013	.0200	-.1228	3.31	9.57	.3977	.01	8.56
48	.60	10.42	-.4812	.23	11.27	-.5513	.1161	-.0070	-.1283	3.35	9.29	.4078	-.08	8.27
60	.72	11.35	-.5249	.31	11.99	-.5851	.1329	-.0423	-.1267	3.38	9.03	.4135	-.18	8.05
72	.89	11.89	-.5551	.33	12.62	-.6099	.1399	-.0761	-.1156	3.40	8.83	.4175	-.31	7.87

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - SEPTEMBER
PERIOD OF RECCRD   - 1/56 - 12/70
ALTITUDE (KM)   - 13
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.96	10.90	.3121	-1.77	10.36	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
6.13	-1.82

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.16	5.76	-.2524	.05	6.11	-.2910	.0969	.0636	-.1220	3.55	10.50	.3261	.18	9.87
24	.37	7.46	-.3339	.10	8.40	-.3956	.1334	.0413	-.1478	3.53	10.21	.3316	-.03	9.46
36	.49	9.34	-.4181	.16	10.44	-.4920	.1324	.0176	-.1435	3.48	9.86	.3511	-.25	8.98
48	.61	10.50	-.4708	.23	11.69	-.5494	.1265	-.0092	-.1330	3.46	9.58	.3643	-.42	8.63
60	.73	11.51	-.5189	.30	12.58	-.5900	.1265	-.0410	-.1183	3.45	9.30	.3771	-.57	8.36
72	.92	12.00	-.54?3	.33	13.16	-.6145	.1282	-.0668	-.1040	3.48	9.15	.3850	-.67	8.17

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 14
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T).$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
4.91	10.16	.2684	-2.46	9.48	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.93	-2.43

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.15	5.34	-.2505	.05	5.63	-.2946	.1238	.0479	-.1145	3.11	9.80	.2777	-.46	9.02
24	.35	6.78	-.3262	.12	7.54	-.3969	.1351	.0564	-.1508	3.15	9.54	.2837	-.46	8.68
36	.49	8.39	-.4016	.16	9.44	-.4869	.1518	.0255	-.1539	3.09	9.25	.2935	-.64	8.23
48	.58	9.51	-.4533	.25	10.56	-.5484	.1355	.0102	-.1486	3.06	8.98	.3060	-.74	7.83
60	.73	10.33	-.5025	.31	11.51	-.5952	.1369	-.0234	-.1312	3.03	8.76	.3168	-.87	7.60
72	.91	10.80	-.5306	.33	12.06	-.6214	.1253	-.0438	-.1099	3.03	8.60	.3290	-.98	7.42

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - SEPTEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 15   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2.68	8.57	.2226	-2.41	7.22	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.16	4.53	-.2443	.04	4.37	-.2966	.0320	.0859	-.0944
24	.32	5.65	-.3113	.09	5.67	-.3808	.0788	.0722	-.1132
36	.46	6.95	-.3844	.13	6.97	-.4712	.0891	.0521	-.1170
48	.57	7.80	-.4485	.19	7.82	-.5300	.0636	.0489	-.1016
60	.69	8.61	-.4920	.24	8.53	-.5763	.0566	.0204	-.0809
72	.84	9.06	-.5229	.27	9.03	-.6052	.0684	-.0073	-.0748

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
2.97	-2.27

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.79	8.27	.2372	-.84	6.86
1.78	8.11	.2422	-.89	6.64
1.76	7.88	.2517	-.97	6.33
1.73	7.66	.2712	-1.01	6.10
1.71	7.44	.2850	-1.08	5.89
1.73	7.29	.2866	-1.12	5.74

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — SEPTEMBER
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM)   — 16
ALPHA ANGLE   — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) — U(AT T)
YP = V(AT T + DT) — V(AT T)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	.23	6.62	.3031	-1.98	5.15	900		.10	-1.90

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.11	3.63	-.2669	.03	4.08	-.3898	.0743	.0172	-.0551	.34	6.38	.3317	-1.03	4.74
24	.23	4.13	-.2992	.05	4.21	-.4004	.1184	.0160	-.0884	.46	6.31	.3287	-1.02	4.71
36	.34	5.03	-.3665	.09	5.27	-.5009	.0799	.0189	-.0765	.46	6.15	.3566	-1.01	4.45
48	.48	5.61	-.4084	.09	5.74	-.5476	.1083	.0040	-.1025	.54	6.03	.3584	-1.01	4.30
60	.60	6.23	-.4604	.14	6.31	-.5989	.0971	-.0120	-.0903	.57	5.87	.3810	-1.00	4.12
72	.73	6.55	-.4870	.17	6.47	-.6129	.1176	-.0442	-.0969	.62	5.78	.3732	-.98	4.07

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD — SEPTEMBER	Y = V(AT T)
PERIOD OF RECORD — 1/56 — 12/70	
ALTITUDE (KM) — 17	XP = U(AT T + DT) — U(AT T)
ALPHA ANGLE — 90.0	YP = V(AT T + DT) — V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-1.81	5.38	.2206	-1.21	3.71	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-1.80	-1.10

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.10	3.80	-.3481	.05	3.71	-.4903	.0029	.0145	-.0071	-.86	5.05	.2726	-.67	3.23
24	.20	3.65	-.3342	.05	3.50	-.4612	.0276	.0478	-.0562	-.75	5.07	.2578	-.76	3.28
36	.30	4.67	-.4289	.10	4.45	-.5884	.0942	-.0115	-.0751	-.73	4.86	.2677	-.69	2.99
48	.40	4.87	-.4474	.10	4.51	-.5957	.0670	.0092	-.0757	-.67	4.81	.2755	-.70	2.97
60	.51	5.41	-.4992	.14	5.12	-.6729	.1329	-.0496	-.1007	-.63	4.66	.2698	-.66	2.74
72	.61	5.58	-.5204	.14	5.12	-.6721	.1024	-.0468	-.0796	-.7	4.60	.2825	-.64	2.74

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 18
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X		GIVEN Y	
	-3.89	4.43	.2028	-.75	3.01	900		-3.81		-.72	

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.10	3.48	-.3874	.02	3.48	-.5778	.0854	-.0267	-.0492	-1.95	4.09	.2435	-.46	2.46
24	.18	3.19	-.3544	.04	3.24	-.5413	.1089	-.0101	-.0788	-1.90	4.14	.2261	-.56	2.53
36	.27	4.03	-.4470	.05	3.98	-.6642	.1106	-.0141	-.0945	-1.87	3.96	.2498	-.55	2.25
48	.33	4.07	-.4564	.07	3.98	-.6640	.1649	-.0602	-.1204	-1.82	3.94	.2187	-.50	2.25
60	.42	4.68	-.5165	.07	4.34	-.7209	.1590	-.0523	-.1379	-1.81	3.79	.2290	-.52	2.08
72	.49	4.68	-.5203	.06	4.26	-.7076	.1713	-.0797	-.1310	-1.76	3.78	.2185	-.48	2.13

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - SEPTEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 19   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP | |
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-6.10	3.95	.1730	-.64	2.61	900	-9.13	-.63

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.09	3.45	-.4375	-.01	3.54	-.6785	.0594	-.0528	-.0134	-1.49	3.55	.2398	-.25	1.92
24	.19	3.07	-.4052	.02	3.03	-.5815	.1054	-.0049	-.0773	-1.27	3.61	.2032	-.77	2.12
36	.27	3.72	-.4832	.01	3.65	-.6958	.1239	-.0818	-.0605	-1.29	3.46	.2115	-.36	1.88
48	.35	3.85	-.4977	.03	3.52	-.6664	.1370	-.0563	-.0896	-1.29	3.42	.2022	-.54	1.95
60	.43	4.16	-.5291	.01	3.89	-.7322	.1287	-.0837	-.0746	-1.31	3.35	.2145	-.39	1.78
72	.50	4.34	-.5545	.04	3.65	-.6648	.1779	-.1079	-.1085	-1.26	3.28	.1754	-.40	1.91

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 20
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-8.07	3.89	.1293	-.45	2.42	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-9.13	-.46

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.09	3.74	-.4850	-.01	3.35	-.6964	.1173	-.1216	-.0162	-3.40	3.40	.1573	.01	1.73
24	.21	3.20	-.4279	.01	3.03	-.6234	.0990	-.0247	-.0514	-3.22	3.52	.1601	-.48	1.89
36	.31	4.02	-.5312	.01	3.42	-.6992	.1166	-.0985	-.0323	-3.20	3.30	.1613	-.12	1.73
48	.41	3.78	-.5116	.01	3.41	-.6930	.1559	-.0918	-.0725	-3.04	3.35	.1411	-.32	1.74
60	.50	4.41	-.5793	.02	3.57	-.7232	.1365	-.1168	-.0529	-3.13	3.17	.1431	-.12	1.67
72	.61	4.16	-.5539	.04	3.47	-.6979	.1451	-.1092	-.0633	-3.02	3.24	.1353	-.17	1.73

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   — CAPE KENNEDY
MONTH OF RECORD — SEPTEMBER
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM)   - 21
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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| | QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | | | | • | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP | | | | |

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N				•		GIVEN X	GIVEN Y		
	-9.64	3.60	.0294	-.21	2.47	900				•		-9.72	-.22		

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.11	3.42	-.4751	-.01	3.40	-.6908	-.0698	.0213	.0539	•	-4.75	3.17	.0848	.08	1.79
24	.23	3.04	-.4316	.01	3.22	-.6520	-.0284	.0257	.0161	•	-4.55	3.25	.0629	-.16	1.88
36	.34	3.70	-.5132	.01	3.52	-.7084	-.0061	-.0231	.0296	•	-4.57	3.08	.0630	.09	1.75
48	.45	3.53	-.5036	.02	3.41	-.6871	.0562	-.0501	-.0060	•	-4.41	3.11	.0311	-.02	1.80
60	.57	4.06	-.5668	.03	3.56	-.7147	-.0088	-.0168	.0193	•	-4.47	2.97	.0536	.04	1.73
72	.68	3.88	-.5391	.01	3.46	-.6935	.0674	-.0678	-.0131	•	-4.42	3.03	.0147	.04	1.78

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 22
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-10.89	3.55	-.0208	-.27	2.50	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-10.95	-.25

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.10	3.33	-.4705	-.00	3.57	-.7088	-.0302	-.0184	.0306	-5.36	3.13	-.0287	.19	1.76
24	.22	3.19	-.4491	-.01	3.20	-.6353	.0264	-.0174	-.0142	-5.30	3.17	-.0435	-.15	1.93
36	.31	3.57	-.4994	.01	3.64	-.7177	-.0255	-.0237	.0326	-5.30	3.08	-.0304	.19	1.73
48	.44	3.72	-.5167	-.00	3.43	-.6856	.0245	-.0285	.0085	-5.28	3.04	-.0337	-.06	1.82
60	.55	3.90	-.5386	-.02	3.63	-.7249	-.0110	.0049	.0184	-5.25	2.99	-.0157	-.13	1.72
72	.67	4.01	-.5395	-.03	3.52	-.6994	.0517	-.0552	-.0034	-5.33	2.99	-.0556	-.02	1.78

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – SEPTEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 23
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-11.79	3.72	.0281	-.27	2.51	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-11.80	-.27

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.12	3.39	-.4495	.03	3.61	-.7296	-.0089	.0057	.0016	-5.91	3.33	.0474	-.12	1.72
24	.22	3.39	-.4467	.00	3.28	-.6611	.0086	-.0102	.0002	-5.89	3.33	.0390	-.10	1.88
36	.35	3.73	-.4816	.03	3.69	-.7423	.0212	-.0319	-.0052	-5.95	3.26	.0281	.01	1.68
48	.49	3.95	-.4977	.00	3.49	-.6993	.0397	-.0396	-.0118	-6.02	3.23	.0225	-.04	1.80
60	.61	4.10	-.5131	.00	3.68	-.7397	.0784	-.0706	-.0387	-6.01	3.20	-.0120	-.04	1.69
72	.76	4.30	-.5372	-.01	3.53	-.7076	.0257	-.0162	-.0271	-5.95	3.14	.0169	-.16	1.77

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

```
STATION (12869)     - CAPE KENNEDY              X  = U(AT T)
MONTH OF RECORD     - SEPTEMBER                 Y  = V(AT T)
PERIOD OF RECORD    - 1/56 - 12/70
ALTITUDE (KM)       - 14                        XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE         -  90.0                     YP = V(AT T + DT) - V(AT T)
```

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-12.39	3.90	.0595	-.45	2.62	900	-12.32	-.48

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.13	3.47	-.4325	.03	3.71	-.7130	.0257	-.0419	.0077	-6.34	3.51	.0867	.03	1.84
24	.23	3.43	-.4242	.00	3.26	-.6287	-.0088	-.0105	.0154	-6.35	3.53	.0866	-.05	2.04
36	.36	3.84	-.4717	.02	3.75	-.7174	.0128	-.0211	-.0016	-6.32	3.44	.0858	-.10	1.83
48	.49	4.02	-.4850	.01	3.66	-.6995	.0675	-.1039	-.0025	-6.35	3.41	.0482	.27	1.87
60	.64	4.21	-.4989	.02	3.78	-.7193	.0160	-.0177	-.0175	-6.40	3.39	.0727	-.15	1.82
72	.78	4.37	-.5196	-.00	3.70	-.7163	.0643	-.0689	-.0308	-6.32	3.33	.0432	-.04	1.82

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12869) — CAPE KENNEDY
MONTH OF RECORD — SEPTEMBER
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 25
ALPH' ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-12.99	4.20	.0619	-.65	2.76	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.15	3.68	-.4298	.02	3.77	-.6817	-.0125	-.0297	.0198
24	.29	3.69	-.4308	.04	3.54	-.6406	-.0140	-.0587	.0433
36	.46	4.16	-.4797	.05	3.92	-.7125	.0090	-.0564	.0202
48	.62	4.30	-.4838	.05	3.78	-.6852	-.0090	-.0461	.0364
60	.80	4.43	-.5036	.04	4.04	-.7293	.0505	-.0410	-.0306
72	.93	4.63	-.5276	.03	3.92	-.7069	.0070	-.0078	-.0068

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-12.80	-.70

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-6.66	3.79	.0893	.08	2.02
-6.61	3.79	.0877	.38	2.11
-6.58	3.68	.0852	.16	1.93
-6.60	3.66	.0973	.17	2.01
-6.49	3.63	.0634	-.25	1.89
-6.41	3.57	.0925	-.26	1.95

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12853)   - CAPE KENNEDY
MONTH OF RECORD   - SEPTEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 26
ALPHA ANGLE   - 30.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
-13.32	4.65	.0753	-.93	2.66	900	-13.18	-.96

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.17	3.95	-.4298	-.02	3.49	-.6519	.0247	-.0605	-.0040	-6.58	4.20	.0785	-.07	2.01
24	.30	3.94	-.4253	-.00	3.38	-.6310	-.0048	-.0258	-.0000	-6.56	4.21	.0898	-.20	2.06
36	.51	4.38	-.4687	.02	3.70	-.6954	.0204	-.0808	.0140	-6.54	4.11	.0851	.11	1.90
48	.67	4.46	-.4692	.03	3.66	-.6935	-.0471	-.0247	.0496	-6.60	4.10	.1307	.04	1.91
60	.86	4.84	-.5066	.01	3.88	-.7321	.0446	-.0701	-.0127	-6.47	4.00	.0801	-.16	1.81
72	1.00	4.88	-.5062	.00	3.80	-.7225	-.0341	.0233	.0045	-6.43	4.00	.1308	-.44	1.84

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD - SEPTEMBER	Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70	
ALTITUDE (KM) - 27	XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE - 90.0	YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-13.57	5.13	-.0414	-1.02	3.02	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-13.23	-1.05

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.20	4.28	-.4240	-.04	3.88	-.6404	-.1297	.0644	.0661	•	-6.79	4.64	-.0101	-.33	2.32
24	.40	4.17	-.4007	-.03	3.92	-.6483	-.1008	.0456	.0637	•	-6.93	4.70	-.0115	-.31	2.30
36	.63	4.68	-.4535	-.05	4.24	-.7037	-.1122	.0608	.0846	•	-6.69	4.55	.0156	-.35	2.14
48	.82	4.67	-.4504	-.03	4.22	-.7006	-.0775	.0136	.0861	•	-6.75	4.57	.0012	-.13	2.15
60	1.01	5.11	-.4916	-.08	4.28	-.7147	-.0936	.0440	.0833	•	-6.64	4.46	.0114	-.33	2.11
72	1.17	5.06	-.4774	-.08	4.19	-.7069	-.0936	.0319	.0941	•	-6.73	4.50	.0143	-.23	2.13

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) - CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
9	1/56 - 12/70	0	90.0	-1.59	2.77	.2344	-.24	2.70	900
9	1/56 - 12/70	1	90.0	-2.26	5.65	.2675	.40	4.93	900
9	1/56 - 12/70	2	90.0	-.93	5.99	.2796	.42	4.77	900
9	1/56 - 12/70	3	90.0	-.01	6.01	.2608	.52	4.63	900
9	1/56 - 12/70	4	90.0	.59	6.01	.2604	.56	4.62	900
9	1/56 - 12/70	5	90.0	.89	6.21	.3041	.39	4.89	900
9	1/56 - 12/70	6	90.0	1.10	6.44	.3035	.20	5.28	900
9	1/56 - 12/70	7	90.0	1.54	6.94	.3467	.23	5.76	900
9	1/56 - 12/70	8	90.0	2.20	7.56	.3835	.11	6.33	900
9	1/56 - 12/70	9	90.0	3.10	8.17	.3668	.10	7.00	900
9	1/56 - 12/70	10	90.0	3.99	9.06	.3811	-.14	8.01	900
9	1/56 - 12/70	11	90.0	4.85	10.03	.3785	-.49	9.02	900
9	1/56 - 12/70	12	90.0	5.95	10.63	.3403	-1.09	9.93	900
9	1/56 - 12/70	13	90.0	5.96	10.90	.3121	-1.77	10.36	900
9	1/56 - 12/70	14	90.0	4.91	10.16	.2694	-2.46	9.48	900
9	1/56 - 12/70	15	90.0	2.68	8.57	.2226	-2.41	7.22	900
9	1/56 - 12/70	16	90.0	.23	6.62	.3031	-1.98	5.15	900
9	1/56 - 12/70	17	90.0	-1.81	5.38	.2206	-1.21	3.71	900
9	1/56 - 12/70	18	90.0	-3.89	4.43	.2028	-.75	3.01	900
9	1/56 - 12/70	19	90.0	-6.10	3.95	.1730	-.64	2.61	900
9	1/56 - 12/70	20	90.0	-8.07	3.89	.1293	-.45	2.42	900
9	1/56 - 12/70	21	90.0	-9.64	3.60	.0294	-.21	2.47	900
9	1/56 - 12/70	22	90.0	-10.69	3.55	-.0208	-.27	2.50	900
9	1/56 - 12/70	23	90.0	-11.79	3.72	.0281	-.27	2.51	900
9	1/56 - 12/70	24	90.0	-12.39	3.90	.0595	-.45	2.62	900
9	1/56 - 12/70	25	90.0	-12.99	4.20	.0619	-.65	2.76	900
9	1/56 - 12/70	26	90.0	-13.32	4.65	.0753	-.93	2.66	900
9	1/56 - 12/70	27	90.0	-13.57	5.13	-.0414	-1.02	3.02	900

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD — OCTOBER	Y = V(AT T)
PERIOD OF RECORD — 1/56 - 12/70	
ALTITUDE (KM) — 0	XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE — 90.0	YP = V(AT T + DT) - V(AT T)

. . . .

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
-1.16	3.18	.0349	-1.18	2.89	930	•	-.95	-1.34

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.02	2.78	-.4340	-.01	2.45	-.4243	-.0079	.1016	-.0994	•	-.50	2.84	.0439	-.62	2.60
24	.06	3.03	-.4714	-.02	2.96	-.5127	.0282	.1191	-.1421	•	-.48	2.77	.0330	-.64	2.45
36	.09	3.79	-.5915	-.04	3.46	-.6018	.0176	.0869	-.1154	•	-.52	2.54	.0361	-.60	2.29
48	.13	3.96	-.5761	-.06	3.74	-.6472	.0109	.0400	-.0656	•	-.56	2.49	.0357	-.57	2.20
60	.17	4.37	-.5774	-.08	3.93	-.6797	.0375	-.0058	-.0604	•	-.58	2.33	.0132	-.56	2.12
72	.21	4.33	-.5691	-.10	3.97	-.6857	.0347	-.0378	-.0248	•	-.59	2.36	.0157	-.55	2.10

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 1
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-2.02	6.02	.1913	-1.15	5.14	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-1.56	-1.42

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.02	3.87	-.3049	-.04	3.79	-.3661	.1422	.1608	-.2379	-.90	5.61	.1933	-.86	4.65
24	.05	5.58	-.4458	-.11	5.03	-.4870	.1897	.1194	-.2908	-.98	5.24	.1840	-.77	4.35
36	.10	6.91	-.5325	-.16	6.12	-.5939	.1889	.0445	-.2619	-1.06	4.92	.1822	-.69	4.05
48	.16	7.75	-.6160	-.20	6.72	-.6499	.1870	-.0199	-.2181	-1.11	4.70	.1874	-.64	3.87
60	.20	8.22	-.6494	-.23	7.07	-.6819	.1838	-.0833	-.1612	-1.14	4.57	.1955	-.60	3.75
72	.28	8.57	-.6706	-.29	7.06	-.6820	.1717	-.1044	-.1252	-1.14	4.46	.2110	-.60	3.76

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 2
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.46	6.20	.2327	-.21	4.89	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.01	4.18	-.3132	-.04	3.96	-.3901	.0998	.1122	-.1509
24	.04	5.66	-.4354	-.09	4.83	-.4816	.1778	.0638	-.2087
36	.07	6.91	-.5314	-.11	5.69	-.5670	.2057	.0097	-.2192
48	.14	7.77	-.5935	-.14	6.19	-.6173	.2225	-.0481	-.2070
60	.21	8.28	-.6175	-.16	6.67	-.6614	.2341	-.0931	-.1866
72	.27	8.60	-.6358	-.19	6.77	-.6684	.2318	-.1212	-.1633

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	.90	-.40

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.13	5.84	.2564	.13	4.44
.12	5.52	.2523	.07	4.22
.12	5.21	.2527	.02	3.98
.13	5.00	.2471	-.03	3.82
.15	4.87	.2437	-.06	3.65
.17	4.79	.2527	-.09	3.63

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 3
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
2.36	6.33	.2111	.27	4.98	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.03	3.98	-.3054	-.07	3.82	-.3826	.464	.1066	-.1839
24	.07	5.49	-.4215	-.13	4.99	-.5024	.1894	.0821	-.2374
36	.13	6.75	-.5175	-.15	5.82	-.5849	.2232	.0169	-.2438
48	.22	7.55	-.5658	-.17	6.30	-.6275	.2381	-.0370	-.2314
60	.29	8.09	-.5989	-.18	6.67	-.6518	.2680	-.0853	-.2252
72	.38	8.35	-.6147	-.21	6.94	-.6750	.2486	-.1056	-.1900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
2.74	.08

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.09	5.96	.2184	.75	4.53
1.11	5.65	.2135	.60	4.21
1.13	5.35	.2083	.45	3.97
1.19	5.18	.2011	.34	3.83
1.22	5.05	.1933	.28	3.75
1.27	4.99	.2081	.22	3.66

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 4
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.99	6.49	.2022	.38	5.19	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.04	4.08	-.3090	-.09	3.84	-.3700	.1025	.1394	-.1863
24	.10	5.54	-.4153	-.15	5.05	-.4892	.1837	.0893	-.2371
36	.17	6.65	-.5012	-.19	6.04	-.5812	.2210	.0233	-.2384
48	.26	7.36	-.5507	-.23	6.58	-.6196	.2529	-.0463	-.2243
60	.39	7.86	-.5321	-.22	6.95	-.6424	.2646	-.0804	-.2096
72	.53	8.25	-.5005	-.24	7.14	-.6574	.2635	-.0994	-.2009

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.35	.29

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.88	6.09	.2166	1.16	4.73
1.98	5.80	.2035	.88	4.42
2.00	5.55	.1980	.64	4.14
2.04	5.38	.1885	.45	4.03
2.11	5.26	.1918	.37	3.95
2.20	5.18	.1899	.31	3.89

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 5
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
5.67	6.83	.2566	.26	5.76	930	6.05	.27

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.07	4.37	-.3205	-.11	4.24	-.3649	.1441	.1074	-.1936	2.78	6.39	.2725	1.35	5.28
24	.14	5.80	-.4218	-.17	5.68	-.4911	.2237	.0363	-.2279	2.88	6.12	.2623	.93	4.94
36	.23	6.85	-.4978	-.21	6.62	-.5720	.2704	-.0326	-.2355	2.90	5.88	.2567	.65	4.67
48	.34	7.58	-.5499	-.24	7.32	-.6159	.3010	-.0945	-.2314	2.92	5.68	.2490	.44	4.50
60	.49	8.09	-.5802	-.26	7.74	-.6429	.2973	-.1235	-.2065	2.98	5.55	.2616	.29	4.39
72	.66	8.43	-.5902	-.27	7.98	-.6605	.2924	-.1430	-.1897	3.11	5.51	.2657	.20	4.31

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QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 6
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
7.41	7.41	.2589	.31	6.46	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.10	4.62	-.3093	-.10	4.87	-.3723	.1853	.0664	-.1706
24	.19	6.16	-.4118	-.16	6.41	-.4845	.2476	.0134	-.2179
36	.31	7.28	-.4845	-.20	7.53	-.5674	.2942	-.0589	-.2280
48	.46	8.03	-.5316	-.22	8.21	-.6092	.3284	-.1203	-.2277
60	.63	8.55	-.5576	-.24	8.64	-.6317	.3102	-.1201	-.2089
72	.81	8.92	-.5631	-.24	8.76	-.6403	.2904	-.1143	-.1939

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
7.80	.41

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.77	6.99	.2704	1.55	5.92
3.84	6.69	.2616	1.15	5.58
3.87	6.44	.2520	.78	5.27
3.91	6.26	.2416	.52	5.09
4.00	6.14	.2631	.45	4.98
4.15	6.09	.2780	.39	4.93

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — OCTOBER
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 7
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
9.43	8.40	.2499	.27	7.40	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
9.82	.44

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.11	5.35	-.3243	-.07	5.60	-.3678	.1444	.0702	-.1460	4.63	7.90	.2704	1.70	6.82
24	.23	7.19	-.4334	-.13	7.55	-.4913	.2168	.0102	-.1894	4.75	7.52	.2651	1.19	6.38
36	.38	8.26	-.4968	-.18	8.72	-.5649	.2711	-.0662	-.1964	4.80	7.27	.2543	.76	6.07
48	.57	8.89	-.5308	-.17	9.40	-.5959	.2849	-.0926	-.1946	4.88	7.11	.2571	.62	5.91
60	.76	9.41	-.5542	-.17	9.81	-.6098	.2751	-.0913	-.1806	5.00	6.99	.2768	.57	5.83
72	.95	9.95	-.5744	-.15	9.99	-.6227	.2677	-.0841	-.1841	5.18	6.87	.2862	.58	5.75

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 8
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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		QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							•	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N			•	GIVEN X	GIVEN Y			
	11.77	9.40	.2493	.37	8.53	930			•	12.18	.58			
DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X) •	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.13	5.64	-.3085	-.07	6.31	-.3524	.1720	.0380	-.1293 •	5.77	8.91	.2639	1.90	7.93
24	.26	7.66	-.4163	-.14	8.63	-.4822	.2360	-.0234	-.1744 •	5.89	8.51	.2548	1.29	7.43
36	.40	8.91	-.4835	-.19	9.95	-.5560	.2735	-.0751	-.1907 •	5.93	8.20	.2479	.93	7.05
48	.62	9.76	-.5236	-.17	10.65	-.5855	.2844	-.0963	-.2005 •	6.08	7.99	.2517	.89	6.88
60	.84	10.38	-.5516	-.14	11.12	-.5982	.2753	-.0825	-.1921 •	6.20	7.83	.2692	.86	6.79
72	1.07	10.92	-.5690	-.10	11.42	-.6153	.2636	-.0876	-.1783 •	6.39	7.72	.2814	.75	6.69

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 9
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
14.15	10.74	.2383	.55	10.00	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
14.59	.78

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.13	6.22	-.2971	-.03	7.05	-.3314	.2008	.0178	-.1218	6.98	10.23	.2485	2.19	9.39
24	.25	8.55	-.4054	-.12	9.80	-.4663	.2641	-.0421	-.1667	7.09	9.79	.2399	1.56	8.80
36	.42	10.01	-.4734	-.16	11.42	-.5420	.2913	-.0850	-.1857	7.14	9.44	.2332	1.21	8.37
48	.67	11.02	-.5148	-.14	12.26	-.5728	.2978	-.1005	-.1890	7.29	9.20	.2372	1.07	8.16
60	.92	11.66	-.5426	-.11	12.88	-.5888	.2792	-.0925	-.1811	7.41	9.01	.2526	1.04	8.04
72	1.18	12.16	-.5557	-.03	13.29	-.6066	.2831	-.1104	-.1689	7.60	8.93	.2585	.90	7.92

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD - OCTOBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 10   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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| QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | | | | | | | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP | | | | |

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N				GIVEN X	GIVEN Y		
	16.40	12.00	.2173	.77	11.85	930				16.85	1.08		

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.16	6.66	-.2841	.02	7.94	-.3197	.1792	-.0020	-.0811	7.98	11.50	.2282	1.95	11.21
24	.30	9.15	-.3880	-.04	11.21	-.4566	.2419	-.0413	-.1346	8.16	11.05	.2229	1.78	10.51
36	.49	10.82	-.4598	-.10	13.16	-.5304	.2487	-.0606	-.1547	8.21	10.64	.2233	1.55	10.01
48	.76	12.03	-.5079	-.09	14.35	-.5702	.2398	-.0596	-.1595	8.37	10.32	.2342	1.50	9.69
60	1.03	12.88	-.5406	-.02	15.10	-.5849	.2326	-.0652	-.1502	8.50	10.09	.2464	1.34	9.57
72	1.32	13.52	-.5578	.02	15.43	-.5941	.2271	-.0670	-.1412	8.75	9.95	.2573	1.25	9.50

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 11
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
18.75	13.11	.1921	.67	13.39	930	19.12	.95

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.19	6.98	-.2762	.04	8.53	-.3053	.1145	-.0051	-.0401	8.96	12.60	.2056	1.32	12.74
24	.37	9.62	-.3771	-.02	12.17	-.4375	.1719	-.0341	-.0847	9.18	12.14	.2048	1.29	12.03
36	.62	11.46	-.4478	-.05	14.51	-.5144	.1756	-.0495	-.0991	9.33	11.72	.2079	1.09	11.47
48	.95	12.78	-.4956	-.03	15.92	-.5564	.1800	-.0430	-.1154	9.58	11.38	.2188	1.38	11.10
60	1.25	13.78	-.5331	.05	16.99	-.5740	.1802	-.0418	-.1135	9.73	11.09	.2311	1.35	10.93
72	1.60	14.52	-.5537	.09	17.32	-.5836	.1840	-.0483	-.1123	10.01	10.92	.2360	1.26	10.84

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 12
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	20.41	13.28	.2025	.46	14.12	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.22	6.79	-.2635	.05	8.13	-.2724	.1045	-.0219	-.0176
24	.41	9.37	-.3644	.06	11.94	-.4047	.1579	-.0426	-.0635
36	.65	11.27	-.4364	.04	14.51	-.4815	.1682	-.0566	-.0940
48	.99	12.56	-.4842	.05	16.23	-.5330	.1647	-.0457	-.0937
60	1.30	13.64	-.5228	.12	17.48	-.5596	.1667	-.0456	-.0939
72	1.65	14.45	-.5482	.16	18.08	-.5767	.1849	-.0522	-.1083

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	20.64	.68

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
9.86	12.81	.2148	.44	13.59
9.93	12.37	.2168	.82	12.91
10.11	11.94	.2193	.78	12.37
10.39	11.62	.2337	1.12	11.93
10.59	11.32	.2479	1.18	11.68
10.86	11.11	.2490	1.26	11.51

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 13
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	20.64	12.97	.2279	-.27	13.05	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.19	6.92	-.2777	.03	7.38	-.2669	.1298	-.0236	-.0346
24	.39	9.20	-.3715	.06	10.49	-.3813	.1861	-.0572	-.0707
36	.66	10.91	-.4390	.05	12.86	-.4557	.1904	-.0722	-.0826
48	1.00	12.17	-.4836	.08	14.53	-.5101	.2016	-.0728	-.0974
60	1.33	13.06	-.5120	.17	15.77	-.5378	.2196	-.0823	-.1052
72	1.66	13.85	-.5373	.22	16.44	-.5603	.2199	-.0862	-.1073

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

		GIVEN X			GIVEN Y	
		20.70			-.15	
	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
	9.95	12.46	.2395	.25	12.57
	10.02	12.04	.2401	.25	12.06
	10.18	11.65	.2459	.19	11.61
	10.49	11.35	.2561	.50	11.22
	10.76	11.14	.2622	.61	10.99
	11.01	10.93	.2691	.60	10.80

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – OCTOBER   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 14   XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						•	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP		

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
19.03	11.96	.2371	-.85	10.83	930	18.90	-.77

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.20	6.60	-.2838	.02	6.31	-.2759	.1279	.0150	-.0705	9.61	11.46	.2518	1.10	10.39
24	.44	8.74	-.3792	.03	8.63	-.3818	.1981	-.0254	-.1038	9.63	11.06	.2533	.74	9.99
36	.68	10.33	-.4465	.02	10.53	-.4538	.2322	-.0552	-.1240	9.73	10.70	.2550	.55	9.63
48	1.01	11.31	-.4889	.03	11.95	-.5028	.2412	-.0716	-.1301	9.84	10.43	.2601	.43	9.34
60	1.26	12.15	-.5224	.09	12.93	-.5270	.2601	-.0884	-.1349	9.95	10.20	.2646	.36	9.19
72	1.56	12.84	-.5464	.17	13.51	-.5503	.2497	-.0839	-.1347	10.19	10.02	.2755	.41	9.02

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD — OCTOBER	Y = V(AT T)
PERIOD OF RECORD — 1/56 — 12/70	
ALTITUDE (KM) — 15	XP = U(AT T + DT) — U(AT T)
ALPHA ANGLE — 90.0	YP = V(AT T + DT) — V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
15.81	10.19	.2427	-.82	8.51	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
15.69	-.69

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.20	5.52	-.2775	.01	5.29	-.2927	.0800	.0722	-.0988	8.17	9.76	.2631	1.81	8.09
24	.45	7.33	-.3651	-.01	7.09	-.3942	.1683	.0354	-.1402	8.44	9.45	.2635	1.37	7.77
36	.67	8.79	-.4384	.05	8.51	-.4633	.2122	-.0094	-.1539	8.47	9.14	.2648	.89	7.50
48	.94	9.72	-.4847	.05	9.55	-.5063	.2339	-.0382	-.1527	8.50	8.90	.2712	.62	7.30
60	1.17	10.67	-.5302	.11	10.50	-.5420	.2493	-.0658	-.1484	8.54	8.64	.2799	.40	7.12
72	1.44	11.19	-.5494	.16	10.99	-.5678	.2658	-.0937	-.1456	8.68	8.51	.2790	.23	6.99

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 16
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
11.38	8.36	.2566	-.72	6.53	930		11.33	-.68

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.19	4.66	-.2834	-.01	4.38	-.3215	.1142	.0897	-.1229	6.05	7.98	.2809	1.60	6.12
24	.36	5.84	-.3533	.01	5.57	-.4083	.1997	.0472	-.1703	6.26	7.78	.2736	1.26	5.89
36	.61	7.05	-.4243	.02	6.79	-.4840	.2064	.0124	-.1608	6.25	7.55	.2870	.77	5.66
48	.82	7.83	-.4630	.07	7.49	-.5140	.2271	-.0273	-.1547	6.36	7.40	.2881	.44	5.56
60	1.06	8.49	-.4952	.10	8.23	-.5510	.2373	-.0548	-.1362	6.44	7.26	.3032	.26	5.42
72	1.28	8.95	-.5161	.14	8.55	-.5672	.2551	-.0867	-.1338	6.55	7.16	.2993	.09	5.36

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — OCTOBER
PERIOD OF RECORD — 1/56 – 12/70
ALTITUDE (KM) — 17
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	6.85	7.02	.2867	-.39	4.76	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.16	4.29	-.2998	-.02	4.10	-.4233	.0426	.0791	-.0662
24	.33	4.87	-.3394	-.00	4.34	-.4368	.1594	.0650	-.1450
36	.48	5.82	-.4067	-.01	5.45	-.5424	.1624	.0276	-.1383
48	.67	6.39	-.4403	.04	5.73	-.5497	.2083	-.0182	-.1509
60	.82	7.01	-.4824	.05	6.32	-.6064	.2292	-.0723	-.1341
72	1.00	7.40	-.5066	.09	6.41	-.6018	.2629	-.1062	-.1409

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	6.84	-.32

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.62	6.69	.3351	.48	4.29
3.85	6.57	.3205	.65	4.23
3.85	6.39	.3396	.38	3.96
3.98	6.29	.3295	.24	3.95
3.98	6.15	.3418	.07	3.77
4.06	6.05	.3320	.01	3.79

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD — OCTOBER	Y = V(AT T)
PERIOD OF RECORD — 1/56 - 12/70	
ALTITUDE (KM) — 18	XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE — 90.0	YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
2.96	5.84	.2876	-.41	3.65	930		3.00	-.42

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.13	4.01	-.3359	.01	3.67	-.4973	.1614	.0117	-.1106	1.64	5.49	.3239	.06	3.15
24	.27	4.18	-.3480	.03	3.60	-.4782	.1609	.0576	-.1439	1.75	5.45	.3256	.15	3.17
36	.39	5.23	-.4340	.02	4.54	-.5994	.2025	-.0184	-.1630	1.79	5.25	.3271	.01	2.90
48	.53	5.36	-.4448	.06	4.67	-.5978	.1941	-.0317	-.1421	1.82	5.22	.3358	-.03	2.91
60	.64	5.96	-.4901	.10	5.08	-.6464	.2190	-.0703	-.1512	1.88	5.09	.3389	-.05	2.77
72	.81	6.12	-.4951	.13	5.18	-.6489	.1954	-.0635	-.1270	1.96	5.07	.3587	-.06	2.77

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 19
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.12	5.00	.2016	-.45	3.11	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
.06	-.46

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.15	3.89	-.3721	.03	3.88	-.6182	.0012	.0319	-.0108	.17	4.64	.2840	-.22	2.44
24	.29	3.77	-.3505	.03	3.45	-.5408	.1669	-.0171	-.0852	.24	4.68	.2305	-.22	2.61
36	.42	4.40	-.4100	.06	4.18	-.6498	.0618	-.0003	-.0260	.29	4.56	.2903	-.21	2.36
48	.54	4.74	-.4366	.08	4.13	-.6216	.1465	-.0440	-.0598	.34	4.50	.2629	-.21	2.43
60	.65	5.19	-.4322	.13	4.61	-.6970	.1285	-.0322	-.0722	.40	4.38	.2856	-.20	2.22
72	.77	5.42	-.5095	.11	4.48	-.6684	.1926	-.0973	-.0859	.44	4.30	.2506	-.20	2.31

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 20
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	-1.68	4.61	.1544	-.31	2.85	930		-1.78	-.29

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.13	3.86	-.4044	-.02	3.36	-.5858	.0722	-.0187	-.0414	-.76	4.22	.1886	-.21	2.31
24	.23	3.59	-.3706	-.00	3.20	-.5522	.0583	-.0065	-.0332	-.72	4.28	.1881	-.21	2.38
36	.34	4.34	-.4485	.00	3.88	-.6706	.0743	-.0452	-.0343	-.67	4.12	.2013	-.17	2.11
48	.47	4.30	-.4359	.05	3.87	-.6485	.0915	-.0655	-.0266	-.63	4.15	.1964	-.13	2.17
60	.59	4.78	-.4859	.05	4.27	-.6954	.1045	-.0696	-.0391	-.57	4.03	.2049	-.10	2.05
72	.71	4.82	-.4909	.08	4.17	-.6733	.0987	-.0885	-.0118	-.52	4.01	.2107	-.10	2.11

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 21
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-2.65	4.32	.1694	-.39	2.70	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-2.77	-.44

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.12	3.74	-.4250	.00	3.62	-.6710	.1344	-.1261	-.0381	-1.24	3.91	.1917	-.09	2.00
24	.25	3.45	-.3807	-.01	3.04	-.5606	.1046	-.0718	-.0348	-1.21	3.99	.1892	-.14	2.24
36	.36	4.14	-.4508	-.02	3.76	-.6923	.1290	-.1091	-.0459	-1.18	3.85	.1998	-.13	1.95
48	.51	4.11	-.4303	-.01	3.65	-.6581	.1605	-.1158	-.0459	-1.17	3.89	.1984	-.15	2.03
60	.60	4.47	-.4636	.02	3.98	-.7122	.1726	-.1381	-.0521	-1.14	3.82	.2014	-.13	1.89
72	.75	4.59	-.4613	.02	3.98	-.7137	.1714	-.1294	-.0554	-1.12	3.83	.2038	-.15	1.89

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 22
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-3.26	4.36	.0642	-.52	2.81	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.13	3.84	-.4129	.01	3.57	-.6370	-.0397	-.0222	.0487
24	.29	3.41	-.3691	.00	3.24	-.5723	.0088	.0189	-.0042
36	.43	3.95	-.4236	.01	3.77	-.6709	.0195	-.0528	.0364
48	.57	4.05	-.4127	-.01	3.73	-.6635	.0697	-.0662	.0160
60	.68	4.45	-.4581	.02	4.14	-.7328	.0675	-.0839	.0222
72	.80	4.58	-.4652	.02	4.00	-.7062	.0749	-.0964	.0246

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-3.42	-.62

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-1.53	3.97	.1081	-.07	2.16
-1.51	4.05	.0927	-.28	2.30
-1.49	3.94	.1072	-.09	2.08
-1.51	3.96	.0977	-.16	2.10
-1.44	3.87	.1072	-.11	1.91
-1.42	3.85	.0980	-.09	1.99

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 23
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	-3.68	4.63	.0639	-.50	2.75	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-3.88	-.55

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.13	3.75	-.3928	.01	3.57	-.6430	.0715	-.1169	.0169	-1.76	4.26	.0666	-.02	2.10
24	.31	3.75	-.3821	.00	3.25	-.5850	.0284	-.0438	.0129	-1.72	4.28	.0818	-.15	2.23
36	.47	4.15	-.4113	-.00	3.85	-.6934	.0779	-.1256	.0249	-1.70	4.22	.0788	-.03	1.97
48	.60	4.38	-.4216	.00	3.87	-.6968	.1192	-.1222	-.0094	-1.69	4.20	.0628	-.12	1.97
60	.77	4.77	-.4551	.03	4.04	-.7226	.1371	-.1383	-.0056	-1.63	4.12	.0680	-.12	1.90
72	.89	4.93	-.4633	.03	4.09	-.7267	.1736	-.1468	-.0357	-1.60	4.10	.0465	-.17	1.89

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - OCTOBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 24
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-3.72	4.86	.0535	-.46	2.78	930

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.15	3.60	-.3572	.00	3.51	-.6332	.0012	-.0410	.0252
24	.34	3.54	-.3370	.02	3.36	-.6021	.0089	-.0334	.0180
36	.50	4.20	-.3930	.03	3.92	-.7016	.0630	-.1123	.0270
48	.66	4.45	-.3965	.06	3.92	-.6979	.0809	-.1102	.0192
60	.81	4.88	-.4296	.07	4.12	-.7331	.1061	-.1312	.0198
72	.97	5.02	-.4369	.08	4.12	-.7267	.1178	-.1386	.0158

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-3.80	-.45

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
-1.83	4.54	.0764	-.11	2.15
-1.81	4.58	.0731	-.14	2.21
-1.78	4.46	.0699	-.03	1.97
-1.80	4.46	.0693	-.06	1.98
-1.75	4.38	.0733	-.06	1.88
-1.71	4.38	.0675	-.06	1.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – OCTOBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 25
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-3.39	5.21	.0845	-.55	2.92	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-3.37	-.51

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.18	3.68	-.3289	.00	3.54	-.6085	.0030	-.0481	.0276	-1.75	4.92	.1151	-.16	2.31
24	.38	3.82	-.3205	.00	3.45	-.5877	.0336	-.0512	.0301	-1.77	4.93	.1204	-.20	2.36
36	.57	4.42	-.3591	.04	4.04	-.6836	.0720	-.1150	.0504	-1.75	4.85	.1405	-.11	2.12
48	.76	4.69	-.3661	.07	4.04	-.6770	.1031	-.1038	.0332	-1.73	4.84	.1383	-.18	2.15
60	.94	5.06	-.3841	.10	4.39	-.7284	.1083	-.1268	.0530	-1.71	4.79	.1661	-.13	2.00
72	1.12	5.32	-.4042	.09	4.39	-.7173	.1015	-.1077	.0507	-1.63	4.74	.1681	-.17	2.03

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY            X  = U(AT T)
MONTH OF RECORD    - OCTOBER                 Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 26                      XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE        - 90.0                    YP = V(AT T + DT) - V(AT T)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
-2.75	5.83	.1502	-.64	3.06	930

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
-2.56	-.71

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.20	3.66	-.2972	.05	3.83	-.6292	.0367	-.0809	.0204	-1.47	5.56	.1972	-.13	2.37
24	.44	3.86	-.2898	.04	3.68	-.5992	.0582	-.0324	-.0098	-1.44	5.58	.1917	-.29	2.45
36	.62	4.45	-.3238	.06	4.24	-.6846	.1230	-.1141	.0054	-1.42	5.51	.2094	-.20	2.23
48	.83	4.88	-.3107	.09	4.22	-.6700	.1396	-.1130	.0088	-1.40	5.47	.2145	-.21	2.27
60	1.05	5.30	-.3598	.11	4.53	-.7150	.1492	-.1157	-.0037	-1.34	5.43	.2215	-.23	2.14
72	1.27	5.55	-.3594	.10	4.42	-.6837	.1910	-.1322	-.0358	-1.27	5.41	.1847	-.26	2.23

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	– CAPE KENNEDY	X = U(AT T)	
MONTH OF RECORD	– OCTOBER	Y = V(AT T)	
PERIOD OF RECORD	– 1/56 – 12/70		
ALTITUDE (KM)	– 27	XP = U(AT T + DT) – U(AT T)	
ALPHA ANGLE	– 90.0	YP = V(AT T + DT) – V(AT T)	

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
-1.96	6.16	.1192	-.76	3.23	930		-2.33	-.89

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.24	3.99	-.3011	.05	4.06	-.6321	.1126	-.1089	-.0104		-.78	5.88	.1371	-.22	2.50
24	.46	4.07	-.2694	.06	3.78	-.5869	.0816	-.0625	.0073		-.85	5.93	.1534	⅓.26	2.61
36	.70	4.67	-.2923	.08	4.51	-.6927	.1171	-.1207	.0128		-.83	5.89	.1691	-.20	2.32
48	.94	5.11	-.3133	.09	4.44	-.6643	.1076	-.0969	.0226		-.77	5.84	.1781	-.24	2.41
60	1.16	5.71	-.3497	.12	4.72	-.7075	.1264	-.1387	.0155		-.69	5.76	.1708	-.18	2.27
72	1.39	6.01	-.3603	.08	4.67	-.6??	.1252	-.1154	-.0073		-.61	5.74	.1532	-.24	2.34

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) - CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
10	1/56 - 12/70	0	90.0	-1.16	3.18	.0349	-1.18	2.89	930
10	1/56 - 12/70	1	90.0	-2.02	6.02	.1913	-1.15	5.14	930
10	1/56 - 12/70	2	90.0	.46	6.20	.2327	-.21	4.89	930
10	1/56 - 12/70	3	90.0	2.36	6.33	.2111	.27	4.98	930
10	1/56 - 12/70	4	90.0	3.99	6.49	.2022	.38	5.19	930
10	1/56 - 12/70	5	90.0	5.67	6.83	.2566	.26	5.76	930
10	1/56 - 12/70	6	90.0	7.41	7.41	.2589	.31	6.46	930
10	1/56 - 12/70	7	90.0	9.43	8.40	.2499	.27	7.40	930
10	1/56 - 12/70	8	90.0	11.77	9.40	.2493	.37	8.53	930
10	1/56 - 12/70	9	90.0	14.15	10.74	.2389	.55	10.00	930
10	1/56 - 12/70	10	90.0	16.40	12.00	.2173	.77	11.85	930
10	1/56 - 12/70	11	90.0	18.75	13.11	.1921	.67	13.39	930
10	1/56 - 12/70	12	90.0	20.41	13.28	.2025	.46	14.12	930
10	1/56 - 12/70	13	90.0	20.64	12.97	.2279	-.27	13.05	930
10	1/56 - 12/70	14	90.0	19.03	11.96	.2371	-.85	10.83	930
10	1/56 - 12/70	15	90.0	15.81	10.19	.2427	-.82	8.51	930
10	1/56 - 12/70	16	90.0	11.38	8.36	.2566	-.72	6.53	930
10	1/56 - 12/70	17	90.0	6.85	7.02	.2867	-.39	4.76	930
10	1/56 - 12/70	18	90.0	2.96	5.84	.2876	-.41	3.65	930
10	1/56 - 12/70	19	90.0	.12	5.00	.2016	-.45	3.11	930
10	1/56 - 12/70	20	90.0	-1.68	4.61	.1544	-.31	2.85	930
10	1/56 - 12/70	21	90.0	-2.65	4.32	.1694	-.39	2.70	930
10	1/56 - 12/70	22	90.0	-3.26	4.36	.0642	-.52	2.81	930
10	1/56 - 12/70	23	90.0	-3.68	4.63	.0639	-.50	2.75	930
10	1/56 - 12/70	24	90.0	-3.72	4.86	.0535	-.46	2.78	930
10	1/56 - 12/70	25	90.0	-3.39	5.21	.0845	-.55	2.92	930
10	1/56 - 12/70	26	90.0	-2.75	5.83	.1502	-.64	3.06	930
10	1/56 - 12/70	27	90.0	-1.96	6.16	.1192	-.76	3.23	930

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD — NOVEMBER	Y = V(AT T)
PERIOD OF RECORD — 1/56 - 12/70	
ALTITUDE (KM) — 0	XP = U(AT T + DT) — U(AT T)
ALPHA ANGLE — 90.0	YP = V(AT T + DT) — V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP / CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
.04	2.90	-.2098	-1.11	2.82	900	-.10	-1.16

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.05	2.81	-.4816	-.02	2.80	-.4966	-.2218	.3119	-.0860	.36	2.48	-.2033	-.63	2.38
24	.05	3.17	-.5371	-.05	3.41	-.6068	-.2731	.3505	-.0219	.30	2.40	-.1802	-.63	2.17
36	.05	3.78	-.6412	-.07	3.84	-.6809	-.2839	.3061	.0732	.22	2.20	-.1528	-.61	2.04
48	.03	3.88	-.6573	-.07	4.01	-.7115	-.2839	.2715	.1166	.17	2.18	-.1519	-.59	1.97
60	.02	4.14	-.7094	-.07	4.04	-.7144	-.2709	.2005	.1796	.11	2.05	-.1551	-.57	1.97
72	.02	4.03	-.6937	-.05	4.00	-.7029	-.2734	.1590	.1941	.08	2.09	-.1690	-.56	2.00

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 1
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	.18	6.87	.1475	-.66	5.34	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.08	4.92	-.3565	-.03	4.37	-.4123	.0162	.3528	-.3299
24	.07	6.96	-.5039	-.07	6.10	-.5715	.0312	.2523	-.2692
36	.00	8.05	-.5843	-.10	7.00	-.6561	.0316	.1473	-.1839
48	-.06	8.60	-.6274	-.13	7.49	-.7024	.0456	.0420	-.1162
60	-.09	8.83	-.6484	-.12	7.58	-.7107	.0513	-.0293	-.0653
72	-.10	8.92	-.6590	-.08	7.41	-.6949	.0479	-.0678	-.0250

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	-.32	-.78

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.75	6.02	.1677	-.44	4.47
.57	5.67	.1994	-.39	4.13
.44	5.46	.2123	-.36	3.93
.36	5.31	.2044	-.35	3.78
.31	5.22	.1976	-.33	3.75
.28	5.17	.1987	-.31	3.83

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - NOVEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 2   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						•	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP		

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
	2.84	7.32	.1798	-.18	5.34	900	•	2.34	-.32

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.11	4.97	-.3390	-.00	4.61	-.4433	.0689	.2834	-.2843	•	1.92	6.62	.2037	.75	4.48
24	.18	6.89	-.4664	-.06	6.09	-.5764	.0791	.1993	-.2606	•	1.88	6.27	.2091	.37	4.16
36	.14	8.11	-.5541	-.11	6.99	-.6645	.0753	.1066	-.1994	•	1.80	5.99	.2215	.16	3.90
48	.11	8.81	-.6115	-.14	7.42	-.7080	.0894	.0064	-.1410	•	1.74	5.76	.2209	.01	3.75
60	.07	9.21	-.6475	-.14	7.54	-.7260	.0914	-.0679	-.0910	•	1.68	5.58	.2153	-.09	3.67
72	.08	9.32	-.6576	-.13	7.42	-.7184	.0967	-.1168	-.0557	•	1.67	5.52	.2078	-.15	3.70

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)   - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD   - NOVEMBER              Y  = V(AT T)
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     - 3                     XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE       - 90.0                  YP = V(AT T + DT) - V(AT T)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	5.47	7.69	.1970	-.17	5.66	900	•	4.84	-.35

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.12	5.17	-.3276	.00	4.87	-.4292	.0758	.2714	-.2627	•	3.43	7.03	.2294	1.59	4.81
24	.19	7.03	-.4475	-.04	6.51	-.5746	.0583	.2109	-.2257	•	3.33	6.70	.2553	.90	4.42
36	.21	8.34	-.5358	-.10	7.32	-.6494	.0645	.1013	-.1645	•	3.26	6.42	.2560	.40	4.22
48	.19	9.01	-.5893	-.13	7.67	-.6848	.0807	.0040	-.1130	•	3.17	6.19	.2637	.11	4.11
60	.21	9.40	-.6224	-.15	7.69	-.6367	.0810	-.0157	-.0823	•	3.13	6.01	.2614	-.04	4.05
72	.23	9.71	-.6447	-.14	7.71	-.7021	.1292	-.0961	-.0986	•	3.13	5.88	.2284	-.08	4.03

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD – NOVEMBER	Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70	
ALTITUDE (KM) – 4	XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE – 90.0	YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	•	GIVEN X	GIVEN Y
7.82	8.00	.2164	-.25	6.31	900	•	7.26	-.48

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.13	5.17	-.3113	-.01	5.41	-.4237	.0381	.2664	-.2280	•	4.62	7.40	.2580	2.45	5.43
24	.22	7.27	-.4427	-.04	7.22	-.5684	.0689	.1871	-.2123	•	4.58	7.02	.2780	1.37	4.99
36	.29	8.71	-.5353	-.09	8.08	-.6407	.0949	.0732	-.1712	•	4.51	6.69	.2799	.63	4.77
48	.32	9.58	-.5939	-.10	8.50	-.6851	.1020	-.0149	-.1202	•	4.43	6.42	.2855	.20	4.58
60	.33	10.08	-.6291	-.15	8.62	-.7040	.1264	-.0722	-.1105	•	4.39	6.21	.2703	-.00	4.48
72	.32	10.40	-.6540	-.13	8.75	-.7146	.1573	-.1135	-.1149	•	4.34	6.05	.2524	-.08	4.41

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – NOVEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 5
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
10.40	8.73	.2569	-.27	7.00	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.15	5.85	-.3183	.02	5.71	-.4035	.1100	.2231	-.2489
24	.28	8.13	-.4456	.01	7.61	-.5422	.1336	.1492	-.2434
36	.37	9.60	-.5330	-.07	8.58	-.6146	.1632	.0403	-.2104
48	.41	10.64	-.5946	-.06	9.17	-.6695	.1670	-.0355	-.1687
60	.43	11.21	-.6316	-.09	9.38	-.6932	.1822	-.0961	-.1452
72	.42	11.58	-.6571	-.09	9.49	-.7031	.2073	-.1444	-.1369

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
9.95	-.63

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
6.30	8.06	.2914	3.26	6.12
6.17	7.65	.3076	1.95	5.67
6.01	7.31	.3076	1.04	5.43
5.88	7.00	.3185	.52	5.17
5.78	6.77	.3141	.20	5.04
5.68	6.58	.3015	.02	4.98

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 6
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS
FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	13.12	9.62	.3025	-.23	7.95	900		12.63	-.57

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.15	6.45	-.3256	.02	6.06	-.3748	.2052	.1543	-.2666	8.05	8.88	.3238	3.82	7.13
24	.31	8.97	-.4523	-.02	8.25	-.5183	.2286	.0763	-.2690	7.78	8.42	.3344	2.32	6.61
36	.42	10.46	-.5320	-.09	9.28	-.5890	.2322	-.0038	-.2396	7.52	8.07	.3420	1.34	6.33
48	.47	11.64	-.5959	-.09	9.90	-.6377	.2373	-.0718	-.2122	7.34	7.70	.3481	.73	6.09
60	.48	12.29	-.6345	-.12	10.35	-.6725	.2415	-.1255	-.1870	7.18	7.43	.3502	.32	5.88
72	.49	12.71	-.6618	-.14	10.56	-.6873	.2616	-.1766	-.1746	7.04	7.21	.3392	.02	5.78

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 7
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	15.89	10.26	.3124	-.27	9.12	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.19	6.40	-.2938	-.02	6.84	-.3746	.1902	.1369	-.2221
24	.37	9.25	-.4285	-.05	9.18	-.5092	.2392	.0487	-.2433
36	.48	11.02	-.5162	-.10	10.40	-.5815	.2512	-.0155	-.2412
48	.59	12.32	-.5803	-.12	11.08	-.6311	.2583	-.0702	-.2332
60	.63	13.12	-.6225	-.17	11.62	-.6690	.2623	-.1222	-.2124
72	.65	13.63	-.6524	-.19	11.96	-.6885	.2741	-.1692	-.1955

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	15.42	-.61

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
9.68	9.65	.3339	4.74	8.23
9.43	9.15	.3399	2.72	7.69
9.19	8.70	.3460	1.73	7.32
9.05	8.30	.3490	1.09	7.02
8.87	8.01	.3501	.56	6.76
8.70	7.77	.3467	.16	6.61

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – NOVEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 8
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
18.90	11.18	.3210	-.44	10.47	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
18.31	-.85

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.20	7.10	-.2941	-.04	7.69	-.3681	.1979	.1032	-.2000	11.52	10.56	.3411	4.90	9.55
24	.41	10.08	-.4212	-.07	10.35	-.5007	.2548	.0239	-.2309	11.32	10.04	.3455	3.00	8.91
36	.56	11.97	-.5058	-.09	11.64	-.5669	.2766	-.0405	-.2384	11.08	9.58	.3457	1.92	8.53
48	.69	13.33	-.5668	-.12	12.43	-.6143	.2780	-.0815	-.2370	10.93	9.17	.3485	1.29	8.20
60	.77	14.15	-.6068	-.18	13.08	-.6557	.2950	-.1325	-.2325	10.76	8.87	.3427	.78	7.88
72	.79	14.77	-.6395	-.23	13.61	-.6829	.3011	-.1745	-.2187	10.55	8.59	.3411	.32	7.64

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)    - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD    - NOVEMBER              Y  = V(AT T)
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)      - 9                     XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE        - 90.0                  YP = V(AT T + DT) - V(AT T)
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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
21.89	12.13	.3635	-.27	11.81	900		21.28	-.74

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.22	7.57	-.2884	-.07	8.23	-.3558	.2575	.0632	-.1983	13.44	11.51	.3804	5.56	10.87
24	.47	10.83	-.4172	-.08	11.27	-.4895	.3317	-.0198	-.2558	13.28	10.92	.3771	3.74	10.14
36	.66	12.83	-.4958	-.11	12.71	-.5555	.3232	-.0590	-.2624	13.01	10.45	.3857	2.64	9.70
48	.81	14.13	-.5500	-.13	13.53	-.5987	.3091	-.0888	-.2540	12.78	10.07	.3965	1.89	9.38
60	.92	15.09	-.5903	-.17	14.45	-.6452	.3291	-.1391	-.2522	12.61	9.76	.3964	1.35	8.97
72	.95	15.65	-.6177	-.23	15.10	-.6747	.3334	-.1740	-.2447	12.40	9.52	.3964	.89	8.69

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 10
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
24.84	13.28	.3938	-.31	13.35	900	24.12	-.86

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.24	8.32	-.2888	-.09	8.75	-.3354	.2551	.0246	-.1662	14.91	12.65	.4120	4.63	12.49
24	.53	11.67	-.4091	-.10	12.13	-.4649	.3369	-.0433	-.2344	14.94	12.04	.4111	3.56	11.71
36	.72	13.80	-.4842	-.12	13.91	-.5377	.3271	-.0751	-.2423	14.70	11.56	.4247	2.65	11.17
48	.90	15.23	-.5352	-.11	15.02	-.5880	.3146	-.1053	-.2333	14.51	11.18	.4391	1.90	10.74
60	1.00	16.22	-.5759	-.19	16.03	-.6364	.3410	-.1542	-.2417	14.30	10.83	.4385	1.41	10.26
72	1.04	16.81	-.6033	-.23	16.80	-.6669	.3610	-.1907	-.2541	14.14	10.57	.4285	1.08	9.93

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – NOVEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 11
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
27.83	13.80	.3865	-.45	14.85	900	26.93	-1.10

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.27	8.39	-.2697	-.14	9.17	-.3149	.2553	-.0044	-.1328	16.87	13.26	.4004	3.91	14.05
24	.53	11.88	-.3906	-.15	12.87	-.4415	.3119	-.0438	-.2007	16.77	12.65	.4061	3.51	13.24
36	.70	14.12	-.4712	-.17	15.03	-.5248	.3115	-.0727	-.2183	16.45	12.13	.4204	2.83	12.56
48	.85	15.49	-.5197	-.18	16.25	-.5759	.3021	-.0930	-.2156	16.26	11.76	.4332	2.14	12.08
60	.95	16.47	-.5577	-.29	17.42	-.6270	.3138	-.1332	-.2175	16.04	11.44	.4425	1.65	11.53
72	.97	17.12	-.5867	-.36	18.35	-.6611	.3445	-.1697	-.2422	15.90	11.16	.4292	1.44	11.11

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 12
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS
FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	29.90	14.03	.4052	-.68	15.47	900		29.02	-1.43

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.22	8.37	-.2711	-.12	9.35	-.3110	.2722	-.0267	-.1261	17.66	13.48	.4178	3.36	14.67
24	.53	12.03	-.3935	-.18	13.16	-.4352	.3426	-.0699	-.2064	17.86	12.85	.4194	3.29	13.87
36	.73	14.23	-.4713	-.18	15.45	-.5203	.3419	-.0884	-.2328	17.62	12.33	.4342	3.13	13.13
48	.88	15.49	-.5171	-.16	16.77	-.5729	.3523	-.1141	-.2536	17.54	11.96	.4362	2.85	12.60
60	1.00	16.60	-.5580	-.26	17.96	-.6254	.3567	-.1362	-.2663	17.40	11.60	.4446	2.58	11.98
72	1.04	17.27	-.5859	-.32	19.13	-.6633	.3779	-.1752	-.2822	17.25	11.33	.4331	2.15	11.51

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – NOVEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 13
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
30.24	13.15	.3793	-.46	14.16	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.25	8.14	-.2918	-.07	8.02	.2892	.2454	.0005	-.1333
24	.49	11.58	-.4147	-.12	11.20	-.4062	.2990	-.0390	-.1912
36	.68	13.42	-.4826	-.13	13.39	-.4981	.3121	-.0637	-.2225
48	.81	14.72	-.5360	-.10	14.85	-.5599	.3293	-.0954	-.2462
60	.90	15.55	-.5731	-.19	16.08	-.6215	.3347	-.1242	-.2547
72	.98	16.15	-.5983	-.26	17.23	-.6606	.3577	-.1681	-.2650

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
29.30	-1.64

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
17.48	12.55	.3957	4.24	13.51
17.54	11.93	.4046	3.56	12.88
17.53	11.47	.4128	3.46	12.20
17.36	11.06	.4143	3.15	11.65
17.14	10.74	.4200	2.81	11.02
17.00	10.51	.4078	2.27	10.58

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 14
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	28.33	11.84	.3742	-.65	11.90	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.24	7.49	-.2827	-.07	7.01	-.3018	.1550	.0501	-.1291
24	.46	10.04	-.3825	-.12	9.55	-.4127	.2293	.0177	-.1848
36	.65	11.91	-.4603	-.14	11.26	-.4980	.2891	-.0466	-.2212
48	.78	13.21	-.5148	-.12	12.46	-.5640	.2952	-.0692	-.2406
60	.98	14.20	-.5596	-.18	13.41	-.6222	.3076	-.0972	-.2595
72	1.08	14.98	-.5933	-.28	1'.39	-.6634	.3178	-.1295	-.2673

CONDITIONAL BIVARIATE NORMAL STATISTICS
FOR XP AND YP

	GIVEN X	GIVEN Y
	27.26	-1.44

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
17.03	11.31	.3988	4.35	11.28
17.16	10.87	.4075	3.84	10.75
17.03	10.45	.4026	2.91	10.25
16.92	10.09	.4092	2.65	9.75
16.83	9.75	.4106	2.37	9.24
16.64	9.48	.4080	1.91	8.54

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — NOVEMBER
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM) — 15
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
24.47	9.90	.3551	-.42	9.68	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
23.46	-1.14

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.19	6.39	-.2969	-.03	5.96	-.3185	.1295	.1004	-.1722	14.65	9.36	.3836	5.27	9.07
24	.37	8.37	-.3811	-.04	7.88	-.4226	.2382	.0454	-.2215	15.15	9.05	.3821	4.34	8.65
36	.54	9.85	-.4536	-.11	9.32	-.5083	.2780	-.0112	-.2432	14.97	8.74	.3806	3.35	8.23
48	.68	10.83	-.5047	-.12	10.30	-.5727	.2826	-.0478	-.2517	14.77	8.47	.3814	2.69	7.85
60	.83	11.64	-.5494	-.21	11.18	-.6359	.2948	-.0791	-.2699	14.67	8.19	.3785	2.36	7.39
72	.92	12.28	-.5887	-.28	11.97	-.6774	.3075	-.1169	-.2767	14.43	7.94	.3736	1.87	7.06

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 16
ALPHA ANGLE - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	20.01	8.48	.3104	-.42	8.07	900		19.02	-1.04

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.18	5.70	-.3204	-.02	5.00	-.3143	.1932	.0701	-.1979	12.04	7.95	.3253	3.76	7.58
24	.39	7.20	-.4078	-.02	6.62	-.4205	.2344	.0497	-.2316	11.99	7.65	.3327	3.43	7.22
36	.52	8.32	-.4726	-.07	7.94	-.5150	.2721	.0121	-.2635	11.99	7.38	.3283	3.08	6.80
48	.63	9.16	-.5253	-.08	8.77	-.5786	.2769	-.0396	-.2506	11.71	7.16	.3308	2.24	6.50
60	.73	9.77	-.5662	-.13	9.52	-.6381	.2885	-.0794	-.2619	11.57	6.93	.3206	1.82	6.15
72	.85	10.15	-.5959	-.16	10.10	-.6769	.3090	-.1278	-.2610	11.43	6.78	.3083	1.38	5.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – NOVEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 17
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	15.06	7.43	.2043	-.43	6.74	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	14.27	-.83

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.18	5.29	-.3380	.00	4.78	-.3513	.0070	.1431	-.1334	8.56	6.92	.2396	2.60	6.24
24	.34	6.48	-.4195	-.01	5.98	-.4456	.0762	.1260	-.1706	8.67	6.66	.2452	2.33	5.94
36	.52	7.23	-.4677	-.05	6.99	-.5271	.1320	.0702	-.1689	8.75	6.51	.2430	1.81	5.65
48	.67	7.95	-.5145	-.06	7.67	-.5871	.1829	.0143	-.1834	8.80	6.33	.2305	1.44	5.39
60	.83	8.42	-.5490	-.10	8.35	-.6405	.2013	-.0273	-.1853	8.79	6.18	.2208	1.10	5.13
72	1.01	8.71	-.5724	-.13	8.76	-.6738	.2070	-.0615	-.1783	8.77	6.07	.2128	.78	4.95

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - NOVEMBER
PERIOD OF RECORD - 1/59 - 12/70
ALTITUDE (KM) - 18
ALPHA ANGLE - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	10.01	6.51	.1792	-.41	5.13	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.17	4.95	-.3691	.01	4.01	-.3758	.1047	.0879	-.1427
24	.32	5.59	-.4115	-.01	4.53	-.4308	.1367	.0887	-.1743
36	.45	6.36	-.4721	-.02	5.29	-.5077	.1335	.0865	-.1881
48	.65	6.87	-.5104	-.07	5.86	-.5719	.1795	.0398	-.1931
60	.78	7.42	-.5573	-.12	6.28	-.6169	.1718	.0170	-.1796
72	.91	7.66	-.5806	-.15	6.68	-.6562	.1891	-.0324	-.1725

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	8.54	-.78

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
6.20	6.02	.2019	1.10	4.71
6.36	5.89	.2019	1.12	4.57
6.36	5.68	.2095	1.02	4.35
6.41	5.56	.2013	.83	4.14
6.37	5.38	.2106	.62	3.99
6.36	5.29	.1943	.40	3.84

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD – NOVEMBER	Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70	
ALTITUDE (KM) – 19	XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE – 90.0	YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
6.44	5.67	.1853	-.17	4.09	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
6.16	-.44

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.08	4.62	-.3963	-.02	3.65	-.4411	.0811	.0211	-.0791	3.54	5.20	.2103	.35	3.66
24	.21	4.89	-.4190	-.04	3.70	-.4488	.1841	-.0190	-.1309	3.65	5.14	.1888	.36	3.64
36	.31	5.56	-.4806	-.07	4.44	-.5446	.1433	-.0150	-.1206	3.64	4.97	.2041	.30	3.42
48	.44	5.94	-.5142	-.11	4.65	-.5833	.1651	-.0458	-.1309	3.69	4.86	.1938	.21	3.31
60	.56	6.40	-.5553	-.16	5.02	-.6313	.1815	-.0664	-.1367	3.73	4.71	.1950	.16	3.16
72	.70	6.64	-.5800	-.18	5.19	-.6495	.1964	-.0934	-.1431	3.77	4.62	.1812	.09	3.10

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - NOVEMBER
PERIOD OF RECORD   - 1/56 - 12/70
ALTITUDE (KM)   - 20
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
4.19	5.32	.1609	-.12	3.42	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.05	-.27

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.07	4.41	-.4134	.02	3.56	-.5198	.1142	-.0424	-.0592	2.22	4.84	.1763	.07	2.92
24	.20	4.57	-.4173	-.00	3.40	-.4953	.1584	-.0427	-.0814	2.34	4.83	.1717	.12	2.97
36	.30	5.20	-.4816	.00	3.99	-.5848	.1507	-.0378	-.0928	2.37	4.66	.1843	.14	2.77
48	.39	5.58	-.5092	-.06	4.02	-.6020	.1976	-.0813	-.1119	2.41	4.58	.1642	.08	2.73
60	.49	5.80	-.5304	-.05	4.37	-.6714	.1823	-.0836	-.1098	2.48	4.51	.1716	.08	2.53
72	.59	6.08	-.5528	-.09	4.36	-.6714	.1973	-.0765	-.1315	2.54	4.43	.1679	.09	2.53

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - NOVEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 21   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	3.37	5.53	.2279	-.02	3.10	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.06	4.27	-.3801	.03	3.33	-.5232	.0746	-.0171	-.0228
24	.13	4.35	-.3809	.04	3.10	-.4864	.1736	-.0780	-.0423
36	.23	5.09	-.4505	.05	3.65	-.5809	.1471	-.0888	-.0361
48	.33	5.26	-.4652	.05	3.68	-.5924	.1821	-.1104	-.0591
60	.45	5.71	-.5064	.02	4.05	-.6559	.1934	-.1213	-.0819
72	.49	5.81	-.5176	.02	4.07	-.6540	.2212	-.1220	-.1126

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	3.93	-.86

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.46	5.11	.2847	.47	2.64
1.47	5.11	.2597	.44	2.71
1.50	4.93	.2828	.42	2.52
1.55	4.89	.2688	.42	2.50
1.63	4.77	.2720	.43	2.34
1.67	4.73	.2565	.46	2.34

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – NOVEMBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 22
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
3.16	5.95	.2188	.07	3.27	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.11	4.09	-.3285	.02	3.47	-.5220	.0910	-.0442	-.0259
24	.19	4.52	-.3577	.02	3.21	-.4850	.0870	-.0159	-.0392
36	.28	5.15	-.4161	.03	3.84	-.5838	.1380	-.0561	-.0598
48	.38	5.39	-.4374	.03	4.06	-.6192	.2032	-.1122	-.0881
60	.48	5.89	-.4776	.00	4.28	-.6536	.2252	-.1380	-.1048
72	.57	6.11	-.4905	.01	4.35	-.6656	.2479	-.1493	-.1238

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	3.19	.10

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
1.69	5.62	.2562	.04	2.79
1.75	5.56	.2563	.09	2.86
1.77	5.41	.2629	.08	2.65
1.81	5.35	.2411	.06	2.57
1.85	5.23	.2326	.04	2.47
1.91	5.18	.2217	.05	2.44

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   – NOVEMBER   Y = V(AT T)
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 23   XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE   – 90.0   YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
3.72	6.43	.2058	.34	3.21	900		3.80	.36

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.08	4.06	-.3141	.00	3.41	-.5334	.0512	-.0325	-.0097	1.87	6.11	.2479	.14	2.72
24	.17	4.43	-.3311	.02	3.23	-.5108	.1259	-.0520	-.0522	1.98	6.07	.2259	.20	2.76
36	.26	5.12	-.3781	.04	3.88	-.6104	.1286	-.0639	-.0565	2.04	5.95	.2413	.21	2.54
48	.38	5.48	-.3994	.05	3.99	-.6302	.2324	-.1390	-.1034	2.12	5.90	.2018	.20	2.49
60	.47	5.92	-.4255	.04	4.34	-.6869	.2498	-.1645	-.1267	2.19	5.82	.1853	.19	2.33
72	.56	6.25	-.4502	.04	4.44	-.7094	.2466	-.1544	-.1485	2.24	5.74	.1743	.21	2.26

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – NOVEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 24
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
4.81	6.99	.1953	.45	3.31	900

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.08	4.25	-.3009	-.00	3.46	-.5190	.0288	-.0079	-.0099
24	.17	4.70	-.3252	.00	3.51	-.5263	.0718	-.0457	-.0227
36	.30	5.32	-.4535	.03	4.18	-.6262	.0869	-.0231	-.0581
48	.41	5.75	-.3641	.04	4.23	-.6356	.1183	-.0305	-.0821
60	.52	6.26	-.4128	.05	4.56	-.6896	.1596	-.0758	-.0982
72	.63	6.64	-.4371	.06	4.61	-.7036	.1955	-.1038	-.1204

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
4.84	.47

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
2.45	6.66	.2359	.24	2.83
2.55	6.61	.2248	.19	2.81
2.63	6.51	.2347	.32	2.58
2.74	6.44	.2252	.35	2.55
2.82	6.36	.2150	.32	2.39
2.88	6.28	.1960	.32	2.35

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD — NOVEMBER	Y = V(AT T)
PERIOD OF RECORD — 1/56 – 12/70	
ALTITUDE (KM) — 25	XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE — 90.0	YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | **CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP**

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
6.38	7.76	.2359	.37	3.77	900		6.31	.40

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.09	4.32	-.2709	.03	3.94	-.5169	.0876	-.0581	-.0159	3.35	7.47	.2721	.11	3.23
24	.19	4.80	-.2937	.04	4.03	-.5297	.0914	-.0701	-.0318	3.47	7.42	.2624	.08	3.20
36	.29	5.49	-.3372	.05	4.61	-.6062	.1695	-.1168	-.0658	3.52	7.31	.2555	.13	3.00
48	.42	6.15	-.3695	.04	4.87	-.6436	.1580	-.1179	-.0671	3.64	7.21	.2627	.13	2.88
60	.53	6.57	-.3960	.06	5.17	-.6865	.1924	-.1361	-.0951	3.69	7.12	.2532	.18	2.74
72	.66	6.87	-.4147	.06	5.16	-.6896	.2279	-.1561	-.1256	3.77	7.06	.2274	.20	2.73

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - CG
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
7.91	8.25	.2332	.31	3.94	900

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
7.84	.33

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.11	4.44	-.2529	.02	3.69	-.4577	.0310	-.0284	-.0047	4.27	7.98	.2645	.06	3.50
24	.17	5.20	-.2968	.05	3.94	-.4896	.0746	-.0534	-.0354	4.30	7.88	.2533	.08	3.44
36	.29	5.88	-.3402	.06	4.56	-.5698	.1131	-.0876	-.0526	4.31	7.76	.2530	.06	3.24
48	.41	6.50	-.3661	.05	4.77	-.6002	.1672	-.1102	-.0902	4.49	7.67	.2360	.12	3.15
60	.51	7.09	-.3991	.09	5.25	-.6575	.1569	-.0879	-.1063	4.55	7.56	.2454	.26	2.97
72	.61	7.55	-.4198	.12	5.36	-.6764	.1689	-.1017	-.1170	4.64	7.48	.2385	.25	2.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) - CAPE KENNEDY
MONTH OF RECORD - NOVEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 27
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP | CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
9.42	8.88	.1622	.52	4.04	900		9.57	.98

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.04	4.50	-.2400	.03	3.69	-.4502	.0111	-.0064	-.0138	4.88	8.62	.1795	.04	3.61
24	.09	5.39	-.2832	.04	3.92	-.4711	.0531	-.0185	-.0518	4.95	8.51	.1652	.11	3.56
36	.18	6.36	-.3360	.05	4.54	-.5493	.0874	-.0479	-.0650	4.99	8.36	.1608	.07	3.38
48	.26	7.13	-.3760	.06	4.80	-.5882	.1006	-.0445	-.0810	5.03	8.22	.1603	.15	3.27
60	.38	7.72	-.4019	.11	5.22	-.6402	.1226	-.0442	-.1000	5.16	8.12	.1592	.26	3.10
72	.47	8.21	-.4228	.19	5.27	-.6550	.1277	-.0261	-.1252	5.25	8.02	.1528	.39	3.04

BIVARIATE NORMAL STATISTICS OF X, Y

STATION (12868) – CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
11	1/56 – 12/70	0	90.0	.04	2.90	-.2098	-1.11	2.82	900
11	1/56 – 12/70	1	90.0	.18	6.87	.1475	-.66	5.34	900
11	1/56 – 12/70	2	90.0	2.84	7.32	.1798	-.18	5.34	900
11	1/56 – 12/70	3	90.0	5.47	7.69	.1970	-.17	5.66	900
11	1/56 – 12/70	4	90.0	7.82	8.00	.2164	-.25	6.31	900
11	1/56 – 12/70	5	90.0	10.40	8.73	.2569	-.27	7.00	900
11	1/56 – 12/70	6	90.0	13.12	9.62	.3025	-.23	7.95	900
11	1/56 – 12/70	7	90.0	15.89	10.26	.3124	-.27	9.12	900
11	1/56 – 12/70	8	90.0	18.90	11.18	.3210	-.44	10.47	900
11	1/56 – 12/70	9	90.0	21.89	12.13	.3635	-.27	11.81	900
11	1/56 – 12/70	10	90.0	24.84	13.28	.3938	-.31	13.35	900
11	1/56 – 12/70	11	90.0	27.83	13.80	.3865	-.45	14.85	900
11	1/56 – 12/70	12	90.0	29.90	14.03	.4052	-.68	15.47	900
11	1/56 – 12/70	13	90.0	30.24	13.15	.3793	-.46	14.16	900
11	1/56 – 12/70	14	90.0	28.33	11.84	.3742	-.65	11.90	900
11	1/56 – 12/70	15	90.0	24.47	9.90	.3551	-.42	9.68	900
11	1/56 – 12/70	16	90.0	20.01	8.48	.3104	-.42	8.07	900
11	1/56 – 12/70	17	90.0	15.06	7.43	.2043	-.43	6.74	900
11	1/56 – 12/70	18	90.0	10.01	6.51	.1792	-.41	5.13	900
11	1/56 – 12/70	19	90.0	6.44	5.67	.1853	-.17	4.09	900
11	1/56 – 12/70	20	90.0	4.19	5.32	.1609	-.12	3.42	900
11	1/56 – 12/70	21	90.0	3.37	5.53	.2279	-.02	3.10	900
11	1/56 – 12/70	22	90.0	3.16	5.95	.2188	.07	3.27	900
11	1/56 – 12/70	23	90.0	3.72	6.43	.2058	.34	3.21	900
11	1/56 – 12/70	24	90.0	4.81	6.99	.1953	.45	3.31	900
11	1/56 – 12/70	25	90.0	6.38	7.76	.2359	.37	3.77	900
11	1/56 – 12/70	26	90.0	7.91	8.25	.2332	.31	3.94	900
11	1/56 – 12/70	27	90.0	9.42	8.88	.1622	.52	4.04	900

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   –   0
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
.60	2.67	-.2884	-.93	2.96	924

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
.56	-1.06

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	2.59	-.4858	.07	2.88	-.4825	-.3159	.3570	-.0647	.50	2.25	-.2858	-.29	2.52
24	-.07	3.03	-.5736	.11	3.64	-.6074	-.3511	.4004	.0245	.42	2.13	-.2496	-.29	2.28
36	-.05	3.52	-.6657	.14	4.05	-.6817	-.3533	.3417	.1340	.37	1.97	-.2354	-.30	2.14
48	-.02	3.50	-.6600	.15	4.19	-.7028	-.3323	.2745	.1789	.34	2.01	-.2536	-.32	2.10
60	-.01	3.04	-.6856	.15	4.24	-.7088	-.3228	.2348	.2167	.32	1.95	-.2545	-.33	2.09
72	-.01	3.50	-.6565	.15	4.20	-.6968	-.2797	.1835	.1998	.31	2.02	-.2895	-.33	2.13

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 1
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
1.58	6.73	-.0011	.27	5.88	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.03	5.09	-.3845	.12	5.16	-.4370	.0162	.4173	-.3665
24	.03	7.50	-.5594	.27	7.17	-.6067	.0010	.3068	-.2770
36	.14	8.62	-.6383	.35	8.17	-.6939	-.0012	.1701	-.1503
48	.24	9.05	-.6712	.37	8.41	-.7160	-.0029	.0728	-.0625
60	.26	9.23	-.6840	.41	8.43	-.7167	.0000	.0291	-.0242
72	.31	9.28	-.6833	.43	8.44	-.7119	-.0029	.0072	.0071

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	1.11	.21

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
.97	5.72	-.0008	.78	4.66
1.05	5.26	.0048	.56	4.31
1.12	5.08	.0052	.45	4.11
1.16	4.97	.0033	.39	4.08
1.16	4.90	.0030	.39	4.09
1.18	4.91	.0147	.38	4.13

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 2
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
5.03	7.15	.0328	.52	5.56	924

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
-	4.58	.71

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.03	5.32	-.3810	.06	4.93	-.4338	.1209	.3421	-.3776	2.61	6.16	.0046	2.10	4.49
24	.00	7.55	-.5340	.19	6.70	-.5965	.0850	.2624	-.3067	2.67	5.75	.0169	1.32	4.10
36	.11	8.77	-.6153	.27	7.64	-.6836	.0551	.1561	-.1964	2.76	5.51	.0295	.85	3.91
48	.20	9.26	-.6493	.29	7.89	-.7026	.0425	.0622	-.1042	2.82	5.41	.0357	.56	3.92
60	.27	9.40	-.6585	.31	7.95	-.7030	.0354	.0179	-.0535	2.86	5.38	.0436	.44	3.94
72	.34	9.41	-.6587	.35	7.93	-.6927	.0381	-.0094	-.0236	2.91	5.38	.0510	.39	4.01

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY   X = U(AT T)
MONTH OF RECORD   - DECEMBER   Y = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 3   XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE   - 90.0   YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   ·   CONDITIONAL BIVARIATE NORMAL STATISTICS
                                                       ·   FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	·	GIVEN X	GIVEN Y
8.37	7.51	.0932	.38	5.93	924	·	7.89	.66

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	·	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.02	5.31	-.3605	.08	5.50	-.4562	.1514	.2753	-.3199	·	4.58	6.71	.0783	3.18	4.85
24	.00	7.31	-.4934	.19	7.14	-.5928	.1035	.2052	-.2639	·	4.45	6.33	.0974	1.86	4.50
36	.10	8.52	-.5700	.31	7.97	-.6611	.1026	.0950	-.1924	·	4.51	6.09	.0954	1.10	4.34
48	.20	9.09	-.6067	.34	8.22	-.6817	.0906	.0201	-.1248	·	4.54	5.94	.0995	.64	4.31
60	.28	9.30	-.6225	.39	8.22	-.6789	.0597	-.0091	-.0669	·	4.55	5.87	.1174	.41	4.35
72	.35	9.29	-.6215	.46	8.27	-.6766	.0757	-.0309	-.0594	·	4.59	5.88	.1138	.38	4.36

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 4
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
11.71	8.06	.1565	.70	6.67	924	11.19	1.04

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.02	5.62	-.3569	.09	6.06	-.4473	.1422	.2266	-.2717	6.20	7.31	.1687	4.12	5.63
24	.02	7.61	-.4768	.17	7.85	-.5819	.1194	.1647	-.2417	6.16	6.92	.1829	2.57	5.19
36	.09	8.80	-.5467	.31	8.69	-.6413	.1324	.0639	-.1915	6.23	6.68	.1808	1.60	5.02
48	.18	9.33	-.5773	.35	9.13	-.6720	.1214	.0071	-.1417	6.25	6.56	.1869	1.06	4.90
60	.24	9.65	-.5969	.41	9.23	-.6778	.1088	-.0297	-.1036	6.26	6.46	.1911	.72	4.89
72	.34	9.71	-.5990	.48	9.29	-.6794	.1300	-.0634	-.1005	6.33	6.45	.1757	.61	4.89

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 5
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	14.54	8.83	.1726	1.16	7.71	924		14.07	1.65

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.03	8.15	-.3579	.09	7.09	-.4544	.0944	.2272	-.2445	7.30	8.03	.1980	5.16	6.54
24	.00	8.33	-.4794	.17	9.06	-.5796	.1325	.1249	-.2275	7.48	7.61	.1956	3.07	6.09
36	.09	9.60	-.5460	.33	10.02	-.6395	.1445	.0502	-.1950	7.61	7.32	.1968	2.13	5.82
48	.18	10.20	-.5756	.37	10.50	-.6675	.1305	-.0050	-.1432	7.66	7.19	.2049	1.40	5.71
60	.24	10.68	-.6006	.46	10.55	-.6703	.1123	-.0383	-.1019	7.69	7.05	.2134	.95	5.72
72	.34	10.84	-.6092	.54	10.48	-.6635	.1134	-.0578	-.0885	7.74	7.00	.2099	.79	5.77

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 6
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
17.52	9.42	.1966	1.21	8.47	924

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
17.13	1.80

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.02	6.19	-.3341	.10	7.88	-.4623	.0854	.1903	-.1955	8.94	8.74	.2263	5.76	7.25
24	.03	8.49	-.4529	.21	9.92	-.5795	.1517	.0842	-.2004	9.11	8.31	.2208	3.40	6.74
36	.12	9.85	-.5222	.37	11.01	-.6388	.1704	-.0001	-.1689	9.15	8.00	.2228	2.12	6.45
48	.23	10.54	-.5563	.44	11.47	-.6613	.1580	-.0491	-.1259	9.16	7.82	.2316	1.31	6.34
60	.32	10.97	-.5769	.53	11.45	-.6582	.1359	-.0504	-.1083	9.22	7.69	.2407	1.10	6.37
72	.40	11.17	-.5871	.66	11.52	-.6585	.1286	-.0591	-.0936	9.26	7.62	.2463	.98	6.37

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 7
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
20.50	10.52	.2218	1.49	9.32	924

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
20.22	2.13

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.05	7.88	-.3373	.12	8.42	-.4492	.1407	.1216	-.1847	10.31	9.80	.2427	5.61	8.14
24	-.01	9.45	-.4563	.22	10.67	-.5630	.1898	.0294	-.1880	10.48	9.30	.2432	3.32	7.59
36	.06	10.97	-.5245	.38	11.91	-.6215	.2021	-.0472	-.1618	10.50	8.94	.2438	2.02	7.26
48	.12	11.80	-.5606	.47	12.38	-.6430	.2002	-.0839	-.1402	10.52	8.71	.2473	1.41	7.12
60	.20	12.28	-.5836	.57	12.51	-.6465	.1867	-.0839	-.1328	10.54	8.54	.2543	1.31	7.10
72	.27	12.55	-.5962	.72	12.72	-.6543	.1616	-.0723	-.1198	10.58	8.44	.2692	1.31	7.04

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 8
ALPHA ANGLE – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
23.56	11.75	.2809	1.85	10.26	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.09	7.34	-.3260	.12	8.91	-.4350	.1727	.0902	-.1841
24	-.10	10.20	-.4500	.25	11.56	-.5581	.2318	-.0237	-.1845
36	-.05	11.90	-.5170	.38	12.92	-.6192	.2746	-.1092	-.1867
48	-.02	12.90	-.5546	.49	13.47	-.6392	.2813	-.1412	-.1787
60	.02	13.48	-.5789	.56	13.69	-.6487	.2678	-.1442	-.1738
72	.11	13.88	-.5971	.70	13.85	-.6559	.2448	-.1326	-.1662

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X = 23.35   GIVEN Y = 2.56

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
11.75	11.00	.3030	6.13	9.08
11.74	10.45	.3055	3.28	8.44
11.82	10.04	.2930	2.07	8.03
11.85	9.77	.2941	1.60	7.89
11.87	9.58	.2985	1.43	7.80
11.88	9.42	.3116	1.44	7.74

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 9
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	26.78	13.34	.3083	2.12	11.53	924

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
26.69	2.93

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.08	8.18	-.3205	.10	9.61	-.4183	.2334	.0055	-.1596	13.36	12.58	.3201	4.73	10.40
24	-.11	11.31	-.4412	.23	12.63	-.5428	.2616	-.0775	-.1700	13.16	11.95	.3247	2.64	9.65
36	-.10	13.14	-.5085	.36	14.38	-.6137	.2819	-.1439	-.1692	13.10	11.48	.3234	1.58	9.09
48	-.11	14.37	-.5514	.46	15.11	-.6393	.2958	-.1757	-.1723	13.12	11.13	.3204	1.23	8.86
60	-.11	15.13	-.5804	.52	15.38	-.6517	.2821	-.1708	-.1765	13.13	10.86	.3252	1.23	8.74
72	-.07	15.57	-.5984	.65	15.55	-.6582	.2500	-.1480	-.1693	13.15	10.68	.3428	1.35	8.67

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) – CAPE KENNEDY
MONTH OF RECORD – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM) – 10
ALPHA ANGLE – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	29.88	14.63	.3070	2.30	13.01	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.09	8.77	-.3159	.12	10.33	-.3950	.1957	-.0279	-.1070
24	-.15	12.15	-.4353	.27	13.79	-.5272	.2433	-.1071	-.1247
36	-.13	14.27	-.5081	.40	15.75	-.5967	.2799	-.1651	-.1421
48	-.20	15.63	-.5534	.45	16.53	-.6194	.2764	-.1712	-.1499
60	-.20	16.55	-.5829	.52	17.03	-.6392	.2511	-.1476	-.1566
72	-.20	17.20	-.6057	.63	17.15	-.6438	.2401	-.1417	-.1612

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	28.84	3.09

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
14.89	13.86	.3223	3.00	11.91
14.79	13.17	.3274	1.58	11.05
14.79	12.60	.3229	1.02	10.44
14.82	12.18	.3275	1.01	10.21
14.97	11.89	.3431	1.35	10.00
14.99	11.64	.3465	1.39	9.95

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 11
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP		

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
	32.49	15.08	.3057	2.35	14.06	924		32.38	3.07

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.10	8.83	-.3156	.19	10.68	-.3816	.1695	-.0575	-.0643	15.03	14.31	.3232	1.28	13.00
24	-.15	12.38	-.4338	.35	14.54	-.5166	.2304	-.1222	-.0971	15.28	13.59	.3294	.86	12.04
36	-.17	14.40	-.4986	.45	16.61	-.5823	.2753	-.1773	-.1186	15.35	13.07	.3237	.48	11.43
48	-.23	15.81	-.5429	.50	17.44	-.6040	.2812	-.1907	-.1321	15.45	12.66	.3206	.45	11.21
60	-.23	16.90	-.5787	.59	17.93	-.6219	.2544	-.1724	-.1349	15.58	12.30	.3344	.73	11.01
72	-.22	17.84	-.6092	.73	18.23	-.6341	.2389	-.1481	-.1549	15.75	11.96	.3417	1.29	10.88

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 12
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	35.01	15.16	.2937	2.69	14.62	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.05	8.76	-.3078	.19	10.09	-.3421	.1646	-.0530	-.0547
24	-.10	12.52	-.4359	.37	14.28	-.4836	.2442	-.1265	-.0938
36	-.08	14.73	-.5050	.48	16.65	-.5628	.2674	-.1649	-.1156
48	-.12	16.14	-.5511	.53	17.75	-.5976	.2759	-.1832	-.1310
60	-.11	17.30	-.5867	.65	18.40	-.6183	.2649	-.1700	-.1447
72	-.07	18.37	-.6184	.79	18.73	-.6327	.2566	-.1461	-.1707

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	34.84	3.46

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
16.45	14.43	.3088	1.27	13.74
16.48	13.65	.3106	.80	12.80
16.72	13.08	.3103	.70	12.09
16.77	12.65	.3070	.64	11.72
16.98	12.29	.3152	1.12	11.49
17.26	11.91	.3218	1.85	11.32

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12866) - CAPE KENNEDY
MONTH OF RECORD - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM) - 13
ALPHA ANGLE - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	35.94	14.09	.3166	3.00	13.54	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	-.06	8.23	-.3030	.12	8.72	-.3190	.1748	-.0179	-.0937
24	-.07	11.44	-.4226	.24	12.37	-.4497	.2557	-.1052	-.1208
36	-.06	13.66	-.5018	.38	14.56	-.5284	.2863	-.1628	-.1360
48	-.05	15.05	-.5514	.42	15.80	-.5722	.3085	-.1958	-.1560
60	-.04	16.07	-.5855	.51	16.73	-.6053	.2996	-.1936	-.1667
72	-.01	16.76	-.6099	.65	17.13	-.6251	.2801	-.1722	-.1749

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	35.61	3.72

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
17.63	13.41	.3304	3.47	12.83
17.47	12.77	.3291	1.72	12.10
17.41	12.19	.3253	.93	11.50
17.41	11.75	.3167	.71	11.10
17.57	11.42	.3231	1.03	10.78
17.70	11.17	.3379	1.57	10.57

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	– CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD	– DECEMBER	Y = V(AT T)
PERIOD OF RECORD	– 1/56 – 12/70	
ALTITUDE (KM)	– 14	XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE	– 90.0	YP = V(AT T + DT) – V(AT T)

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	QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP									●	CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N				●	GIVEN X	GIVEN Y			
	34.50	12.85	.3365	2.70	11.17	924				●	34.20	3.40			

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	●	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.06	7.45	-.3108	.08	7.27	-.3186	.1422	.0238	-.1130	●	16.30	12.18	.3586	4.64	10.56
24	-.08	10.55	-.4346	.19	10.03	-.4355	.2577	-.0644	-.1628	●	16.71	11.56	.3536	2.95	10.04
36	-.09	12.60	-.5158	.31	11.68	-.5079	.3128	-.1387	-.1871	●	16.67	11.01	.3413	1.85	9.62
48	-.07	13.93	-.5700	.39	12.70	-.5496	.3149	-.1689	-.1889	●	16.54	10.56	.3425	1.37	9.33
60	-.12	14.86	-.6059	.46	13.36	-.5802	.3207	-.1851	-.1994	●	16.55	10.23	.3417	1.30	9.10
72	-.10	15.58	-.6342	.62	13.91	-.6088	.2951	-.1691	-.1990	●	16.63	9.94	.3620	1.61	8.86

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – DECEMBER
PERIOD OF RECORD   – 1/56 – 12/70
ALTITUDE (KM)   – 15
ALPHA ANGLE   – 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
31.00	11.28	.3111	2.32	9.41	924

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
30.72	3.06

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.03	6.90	-.3145	.02	6.10	-.3071	.1541	.0471	-.1347	15.38	10.66	.3331	4.87	8.91
24	-.07	9.29	-.4329	.12	8.33	-.4225	.2295	-.0345	-.1603	15.11	10.14	.3314	2.92	8.51
36	-.07	10.93	-.5073	.23	9.73	-.4921	.2907	-.1057	-.1811	15.11	9.71	.3212	2.02	8.18
48	-.03	12.21	-.5624	.32	10.63	-.5353	.3060	-.1486	-.1798	15.07	9.32	.3198	1.41	7.95
60	-.01	13.29	-.6078	.42	11.17	-.5668	.3036	-.1616	-.1859	15.16	8.95	.3242	1.30	7.75
72	.04	14.00	-.6373	.55	11.62	-.5949	.2763	-.1416	-.1884	15.31	8.69	.3448	1.60	7.56

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — DECEMBER
PERIOD OF RECORD — 1/56 — 12/70
ALTITUDE (KM) — 16
ALPHA ANGLE — 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$
$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP	
MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
26.50	9.52	.2693	2.01	8.39	924	26.24	2.71

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.02	6.19	-.3291	.03	5.66	-.3194	.0752	.0872	-.1238	13.09	8.94	.3005	4.68	7.89
24	.01	8.02	-.4255	.12	7.50	-.4232	.1831	-.0041	-.1456	13.44	8.59	.2921	2.82	7.57
36	.04	9.54	-.5054	.21	8.59	-.4840	.2162	-.0500	-.1601	13.45	8.20	.2909	2.12	7.32
48	.06	10.62	-.5621	.28	9.42	-.5338	.2262	-.0778	-.1661	13.43	7.86	.2930	1.77	7.08
60	.07	11.43	-.6031	.33	9.82	-.5594	.2316	-.1005	-.1618	13.43	7.59	.2971	1.45	6.95
72	.09	12.14	-.6362	.44	10.19	-.5831	.2222	-.0962	-.1675	13.53	7.34	.3078	1.54	6.81

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)	– CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD	– DECEMBER	Y = V(AT T)
PERIOD OF RECORD	– 1/56 – 12/70	
ALTITUDE (KM)	– 17	XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE	– 90.0	YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP • CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N			GIVEN X			GIVEN Y	
	21.64	8.35	.2719	1.53	7.49	924			21.38			2.12	

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.01	5.67	-.3451	-.00	4.97	-.3162	.1545	.0688	-.1671	•	10.94	7.78	.2938	3.86	7.05
24	.04	7.35	-.4452	.08	6.53	-.4116	.2310	.0108	-.2070	•	11.18	7.42	.2874	2.94	6.78
36	.04	8.70	-.5261	.16	7.60	-.4776	.2543	-.0294	-.2257	•	11.16	7.05	.2848	2.37	6.54
48	.05	9.61	-.5834	.20	8.37	-.5166	.2394	-.0537	-.2109	•	11.02	6.75	.2945	1.87	6.34
60	.01	10.36	-.6251	.24	8.98	-.5691	.2311	-.0686	-.2018	•	11.01	6.50	.3063	1.64	6.14
72	-.01	10.73	-.6449	.32	9.39	-.6000	.2131	-.0818	-.1775	•	10.99	6.37	.3194	1.37	5.98

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)   - CAPE KENNEDY              X  = U(AT T)
MONTH OF RECORD   - DECEMBER                  Y  = V(AT T)
PERIOD OF RECORD  - 1/56 - 12/70
ALTITUDE (KM)     - 18                        XP = U(AT T + DT) - U(AT T)
ALPHA ANGLE       - 90.0                      YP = V(AT T + DT) - V(AT T)
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			QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP							CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP				
	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N				GIVEN X	GIVEN Y			
	16.24	7.33	.2434	1.01	6.13	924				16.16	1.57			
DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.01	5.62	-.3837	-.01	4.22	-.3447	.0286	.1130	-.1546	7.83	6.69	.2789	2.38	5.70
24	-.02	6.68	-.4596	.04	5.28	-.4231	.1377	.0534	-.1898	8.12	6.45	.2688	1.92	5.51
36	-.01	7.39	-.5087	.10	6.19	-.4878	.1680	.0206	-.1903	8.18	6.27	.2712	1.69	5.31
48	-.05	8.10	-.5566	.14	6.77	-.5332	.1835	-.0140	-.1891	8.17	6.06	.2702	1.37	5.16
60	-.07	8.57	-.5867	.17	7.26	-.5752	.1987	-.0504	-.1785	8.18	5.92	.2694	1.09	5.00
72	-.08	9.00	-.6144	.23	7.54	-.6035	.2030	-.0680	-.1757	8.18	5.77	.2719	.97	4.87

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY
MONTH OF RECORD — DECEMBER
PERIOD OF RECORD — 1/56 - 12/70
ALTITUDE (KM) — 19
ALPHA ANGLE — 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
11.16	6.84	.2763	.58	4.85	924

	GIVEN X	GIVEN Y
	11.21	1.02

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.01	5.38	-.3991	.03	4.03	-.4232	.0774	.0602	-.1306	5.42	6.23	.3134	1.01	4.38
24	-.02	5.86	-.4302	.04	4.43	-.4557	.0952	.0694	-.1581	5.49	6.12	.3183	1.14	4.29
36	-.02	6.71	-.4883	.08	5.12	-.5220	.1685	.0397	-.2048	5.66	5.91	.3144	1.16	4.09
48	-.03	7.10	-.5157	.11	5.30	-.5381	.1786	.0055	-.1883	5.65	5.82	.3168	.92	4.06
60	-.06	7.60	-.5502	.16	5.83	-.5923	.1703	-.0043	-.1806	5.65	5.68	.3328	.86	3.88
72	-.06	7.89	-.5705	.22	5.87	-.6022	.1682	-.0126	-.1764	5.65	5.59	.3385	.80	3.85

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868) — CAPE KENNEDY	X = U(AT T)
MONTH OF RECORD — DECEMBER	Y = V(AT T)
PERIOD OF RECORD — 1/56 – 12/70	
ALTITUDE (KM) — 20	XP = U(AT T + DT) – U(AT T)
ALPHA ANGLE — 90.0	YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP   •   CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
8.36	6.57	.2056	.32	3.95	924		8.33	.67

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	•	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.01	5.20	-.3978	.00	4.02	-.5099	.0342	.0585	-.0788	•	4.13	6.01	.2493	.46	3.38
24	-.01	5.86	-.4462	.01	4.06	-.5087	.0217	.0803	-.0856	•	4.12	5.86	.2654	.50	3.38
36	-.04	6.46	-.4638	.02	4.66	-.5779	.0503	.0603	-.0923	•	4.16	5.71	.2776	.46	3.20
48	-.06	6.97	-.5262	.05	4.62	-.5735	.0545	.0579	-.1098	•	4.15	5.56	.2787	.47	3.21
60	-.10	7.17	-.5432	.07	4.99	-.6167	.0747	.0494	-.1073	•	4.15	5.50	.2918	.47	3.09
72	-.11	7.46	-.5676	.09	5.01	-.6210	.0913	.0248	-.1103	•	4.14	5.39	.2857	.40	3.08

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 21
ALPHA ANGLE   - 90.0

$X = U(AT\ T)$
$Y = V(AT\ T)$

$XP = U(AT\ T + DT) - U(AT\ T)$
$YP = V(AT\ T + DT) - V(AT\ T)$

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
7.37	6.52	.2894	.30	3.71	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.00	5.14	-.3974	-.04	3.92	-.5365	.1411	-.0509	-.0809
24	.01	5.66	-.4312	-.06	3.85	-.5196	.1971	-.0211	-.1469
36	-.05	6.16	-.4677	-.05	4.28	-.5768	.2230	-.0613	-.1559
48	-.13	6.58	-.4982	-.09	4.48	-.6003	.2247	-.0719	-.1559
60	-.22	7.05	-.5310	-.09	4.64	-.6199	.2249	-.0559	-.1784
72	-.24	7.53	-.5683	-.10	4.73	-.6340	.2404	-.0867	-.1810

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
7.19	.68

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
3.75	5.98	.3306	.07	3.13
3.83	5.87	.3228	.32	3.15
3.82	5.75	.3205	.24	3.02
3.79	5.64	.3282	.19	2.96
3.76	5.51	.3368	.25	2.89
3.74	5.35	.3338	.16	2.86

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 22
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	7.33	6.41	.2682	.10	3.33	924

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	7.00	.36

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.04	4.69	-.3694	-.03	3.39	-.5140	.0653	-.0007	-.0456	3.77	5.96	.3225	.07	2.86
24	-.07	5.06	-.3962	-.05	3.38	-.5093	.1295	-.0228	-.0799	3.79	5.88	.3099	.10	2.86
36	-.13	5.60	-.4297	-.05	3.82	-.5696	.1679	-.0624	-.0908	3.84	5.79	.3111	.04	2.74
48	-.18	6.08	-.4681	-.08	3.99	-.5894	.1763	-.0443	-.1178	3.81	5.66	.3179	.12	2.69
60	-.24	6.53	-.4997	-.08	4.18	-.6183	.1835	-.0663	-.1142	3.79	5.55	.3252	.06	2.61
72	-.32	7.00	-.5352	-.10	4.28	-.6327	.2465	-.1064	-.1584	3.76	5.41	.2976	.06	2.58

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12368)   - CAPE KENNEDY
MONTH OF RECORD   - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 23
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
8.23	7.02	.1909	.18	3.50	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.03	4.83	-.3358	-.01	3.84	-.5420	.1368	-.0466	-.0487
24	.01	5.27	-.3663	-.04	3.67	-.5074	.1528	-.0138	-.0731
36	-.06	6.03	-.4184	-.08	4.23	-.5890	.1402	-.0352	-.0654
48	-.13	6.59	-.4520	-.10	4.21	-.5764	.1859	-.0721	-.0707
60	-.26	6.91	-.4702	-.11	4.67	-.6454	.2035	-.0861	-.0875
72	-.36	7.52	-.5102	-.12	4.78	-.6593	.2498	-.1018	-.1336

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

GIVEN X	GIVEN Y
7.85	.42

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
4.41	6.61	.2196	.13	2.94
4.42	6.53	.2214	.29	3.01
4.38	6.38	.2349	.16	2.82
4.38	6.26	.2281	.09	2.86
4.35	6.20	.2315	.11	2.67
4.33	6.04	.2092	.17	2.62

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   - CAPE KENNEDY
MONTH OF RECORD   - DECEMBER
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)   - 24
ALPHA ANGLE   - 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) - U(AT T)
YP = V(AT T + DT) - V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
	9.97	7.88	.1924	.48	3.58	924

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	9.64	.67

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.04	5.46	-.3395	.00	3.75	-.5231	.1862	-.0585	-.0838	5.30	7.41	.2019	.40	3.05
24	.01	5.99	-.3625	-.01	3.78	-.5267	.2146	-.0740	-.0920	5.41	7.34	.1996	.37	3.04
36	-.06	6.59	-.3982	-.04	4.17	-.5826	.2039	-.0746	-.0953	5.37	7.23	.2073	.37	2.90
48	-.17	7.34	-.4383	-.07	4.38	-.6097	.2271	-.1123	-.1048	5.36	7.08	.1963	.24	2.84
60	-.30	7.92	-.4705	-.10	4.71	-.6529	.2183	-.1325	-.0964	5.31	6.95	.2008	.15	2.71
72	-.41	8.31	-.4884	-.13	4.76	-.6541	.2563	-.1391	-.1273	5.32	6.88	.1866	.21	2.70

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 25
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP						CONDITIONAL BIVARIATE NORMAL STATISTICS FOR YP AND YP	

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N	GIVEN X	GIVEN Y
11.89	8.68	.1841	.65	3.92	924	11.52	.77

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)	MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	.01	5.67	-.3257	-.01	3.96	-.5099	.1119	-.0452	-.0442	6.15	8.21	.2034	.35	3.37
24	-.05	6.30	-.3537	-.03	4.08	-.5214	.2213	-.0546	-.1088	6.31	8.11	.1866	.70	3.33
36	-.11	7.13	-.3919	-.05	4.74	-.6065	.2021	-.0983	-.0821	6.34	7.99	.1967	.40	3.11
48	-.25	7.65	-.4105	-.07	4.83	-.6142	.2354	-.1213	-.1110	6.43	7.91	.1743	.38	3.09
60	-.36	8.31	-.4419	-.09	5.16	-.6588	.2149	-.1350	-.0983	6.41	7.79	.1811	.26	2.95
72	-.49	8.82	-.4606	-.11	5.29	-.6715	.2260	-.1305	-.1135	6.45	7.70	.1790	.33	2.90

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

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STATION (12868)   - CAPE KENNEDY          X  = U(AT T)
MONTH OF RECORD   - DECEMBER              Y  = V(AT T)
PERIOD OF RECORD - 1/56 - 12/70
ALTITUDE (KM)     - 26                    XP = U(AT T +.DT) - U(AT T)
ALPHA ANGLE       - 90.0                  YP = V(AT T + DT) - V(AT T)
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QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP ● CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N		GIVEN X	GIVEN Y
13.42	9.54	.1154	.85	4.21	924		13.03	.89

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)		MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
12	-.00	5.76	-.3001	-.02	4.34	-.5187	.0477	-.0107	-.0116	●	6.95	9.10	.1393	.52	3.60
24	-.01	6.54	-.3335	-.01	4.13	-.4941	.0975	-.0392	-.0141	●	7.08	8.99	.1361	.47	3.66
36	-.06	7.48	-.3744	-.01	4.96	-.5924	.1179	-.0426	-.0382	●	7.17	8.84	.1380	.59	3.39
48	-.17	7.94	-.3897	-.02	5.03	-.6007	.1270	-.0463	-.0487	●	7.24	8.78	.1330	.60	3.36
60	-.30	8.76	-.4266	-.06	5.44	-.6533	.1378	-.0380	-.0749	●	7.24	8.62	.1297	.70	3.18
72	-.43	9.27	-.4484	-.10	5.45	-.6532	.1457	-.0323	-.0823	●	7.22	8.52	.1330	.73	3.18

QUADRAVARIATE AND CONDITIONAL BIVARIATE NORMAL STATISTICS OF X, Y, XP, YP

STATION (12868)   – CAPE KENNEDY
MONTH OF RECORD   – DECEMBER
PERIOD OF RECORD – 1/56 – 12/70
ALTITUDE (KM)   – 27
ALPHA ANGLE   – 90.0

X = U(AT T)
Y = V(AT T)

XP = U(AT T + DT) – U(AT T)
YP = V(AT T + DT) – V(AT T)

QUADRAVARIATE NORMAL STATISTICS OF X,Y,XP,YP

MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
14.62	10.22	.1122	1.27	4.45	924

DT HR	MEAN XP	S.D. XP	R (X,XP)	MEAN YP	S.D. YP	R (Y,YP)	R (XP,YP)	R (XP,Y)	R (YP,X)
12	.03	5.58	-.2581	-.01	3.98	-.4494	.1149	-.0295	-.0295
24	.02	6.70	-.3074	.03	4.32	-.4595	.1468	-.0433	-.0322
36	-.03	7.58	-.3417	.02	5.02	-.5398	.1746	-.0798	-.0403
48	-.12	8.36	-.3691	-.02	5.34	-.5761	.1855	-.0906	-.0553
60	-.24	9.23	-.4073	-.04	5.69	-.6177	.1845	-.0952	-.0681
72	-.37	9.78	-.4283	-.10	5.85	-.6332	.1834	-.0958	-.0641

CONDITIONAL BIVARIATE NORMAL STATISTICS FOR XP AND YP

	GIVEN X	GIVEN Y
	14.17	1.30

MEAN XP	S.D. XP	R (XP,YP)	MEAN YP	S.D. YP
7.93	9.88	.1212	.86	3.97
7.98	9.73	.1241	.89	3.95
8.06	9.60	.1206	.77	3.74
8.17	9.50	.1138	.76	3.64
8.12	9.34	.1082	.75	3.50
8.11	9.24	.1150	.73	3.44

BIVARIATE NORMAL STATISTICS OF X,Y

STATION (12868) - CAPE KENNEDY

X = U(AT T)
Y = V(AT T)

MONTH	PER. OF REC.	ALT KM.	ALPHA DEG.	MEAN X	S.D. X	R (X,Y)	MEAN Y	S.D. Y	N
12	1/56 - 12/70	0	90.0	.60	2.67	-.2884	-.93	2.96	924
12	1/56 - 12/70	1	90.0	1.58	6.73	-.0011	.27	5.88	924
12	1/56 - 12/70	2	90.0	5.03	7.15	.0328	.52	5.56	924
12	1/56 - 12/70	3	90.0	8.37	7.51	.0932	.38	5.93	924
12	1/56 - 12/70	4	90.0	11.71	8.06	.1565	.70	6.67	924
12	1/55 - 12/70	5	90.0	14.54	8.83	.172E	1.16	7.71	924
12	1/56 - 12/70	6	90.0	17.52	9.42	.1966	1.21	8.47	924
12	1/56 - 12/70	7	90.0	20.50	10.52	.2218	1.49	9.32	924
12	1/56 - 12/70	8	90.0	23.56	11.75	.2809	1.85	10.26	924
12	1/56 - 12/70	9	90.0	26.78	13.34	.3083	2.12	11.53	924
12	1/56 - 12/70	10	90.0	29.88	14.63	.3070	2.30	13.01	924
12	1/56 - 12/70	11	90.0	32.49	15.08	.3057	2.35	14.06	924
12	1/56 - 12/70	12	90.0	35.01	15.16	.2937	2.69	14.62	924
12	1/56 - 12/70	13	90.0	35.94	14.09	.3166	3.00	13.54	924
12	1/56 - 12/70	14	90.0	34.50	12.85	.3365	2.70	11.17	924
12	1/56 - 12/70	15	90.0	31.00	11.28	.3111	2.32	9.41	924
12	1/56 - 12/70	16	90.0	26.50	9.52	.2693	2.01	8.39	924
12	1/56 - 12/70	17	90.0	21.64	8.35	.2719	1.53	7.49	924
12	1/56 - 12/70	18	90.0	16.24	7.33	.2434	1.01	6.13	924
12	1/56 - 12/70	19	90.0	11.16	6.84	.2763	.58	4.85	924
12	1/56 - 12/70	20	90.0	8.36	6.57	.2056	.32	3.95	924
12	1/56 - 12/70	21	90.0	7.37	6.52	.2894	.30	3.71	924
12	1/56 - 12/70	22	90.0	7.33	6.41	.2682	.10	3.33	924
12	1/56 - 12/70	23	90.0	8.23	7.02	.1909	.18	3.50	924
12	1/56 - 12/70	24	90.0	9.97	7.88	.1924	.48	3.58	924
12	1/56 - 12/70	25	90.0	11.89	8.68	.1841	.65	3.92	924
12	1/56 - 12/70	26	90.0	13.42	9.54	.1154	.85	4.21	924
12	1/56 - 12/70	27	90.0	14.62	10.22	.1122	1.27	4.45	924